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MARCH 1987/$2.50

WEEDS TREES & TURF

the magazine of

LANDSCAPE MANAGEMENT

Government Buyer's Guide

Tree/Ornamental Disease Control

Insect Control Guide

Boardwalk and Baseball

Polo Fields Fit for a Prince

The Arizona Biltmore

Country Club of N. Carolina

25th Anniversary Issue

and Commencement of Spring

'The best greens I ever putted on'

Harry Anderson, Greens Chairman
Wilmington CC, Delaware

David Kroll, CGCS, inspects one of 18 PennLinks greens at Wilmington CC, Delaware

PennLinks creeping bentgrass – working wonders at Wilmington

New bentgrass variety provides a truer putting surface at Wilmington CC.

When David Kroll, CGCS, was dealt the problem of bentgrass deterioration on the greens of this prestigious country club, he called in the experts to help. The greens could not be salvaged, so they were treated with methyl bromide and completely re-greened.

This Wilmington green was seeded in early '60s with poor quality seed fraudulently labeled Penncross. All the greens deteriorated to the point that they had to be entirely renovated.

Dr. Joe Duich, Penn State University, suggested seeding with a bentgrass coded PSU 126.

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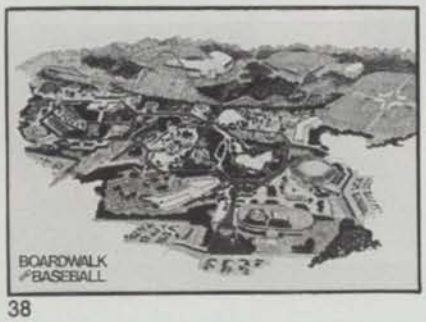
MARCH 1987, VOLUME 26, NUMBER 3

WEEDS TREES & TURF

The Magazine of **LANDSCAPE** MANAGEMENT



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Incorporating an amusement park with a baseball complex provides plenty of maintenance curve balls under the Florida sun.

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Despite the recent controversy, chemical companies are experimenting with new pesticides. But registration may be a long way off.

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Disease control on trees and ornamentals may be as simple as finding the right environment for the plant to thrive. But when that's not enough, follow this guide.

78 THE JEWEL'S GLITTER
At the Arizona Biltmore, you can eat marmalade made from the fruit of the hotel's own orange trees.

82 ROYAL FLUSH
When Prince Charles played polo in Chicago last fall, the field had to be in prime condition for spectators and TV cameras. Field managers worked overtime to prepare the field.

88 GOVERNMENT GLOOM
Working within the framework of a bureaucracy can give government workers the blues. Here are what some must cope with en route to doing their jobs as effectively as possible.

94 FIT FOR A QUEEN
King's Island Golf Course is the home of the Ladies Professional Golf Association championship. The queens of golf treat the superintendent like a king—and vice versa.

100 80 AND GOING STRONG
The Illini Country Club may be 80 years old, but this 'Mike Royko' keeps the spirit of the course going strong.

104 PIONEERING PROFESSIONAL
Two words characterize George Thompson: 'pioneer' and 'professional.' He's not afraid to try something new, but whatever it is, it reflects positively on his golf course.

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Does your landscape contracting company need more revenue? Before you decide to diversify your business, consider these points.

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NEWS/TRENDS

Corporate 'campuses' reshaping suburbs

■ Corporate business parks are radically altering the appearance of many suburbs. With low-rise buildings surrounded by rolling expanses of lawn, clusters of plants, attractive water features and recreational amenities, these business parks are taking on the appearance of college campuses. Much more so than the stereotypical image of a single office building surrounded by an asphalt parking lot.

"Whether created for an individual corporation, a multi-company site or even an industrial park, this 'total environment' approach to development has as its primary goal improved quality of life in the workplace," observes Mark Hunner, vice president of The Brickman Group.

Among the reasons Hunner cites for this growing emphasis are increased competition for tenants, a growing awareness by developers of the benefits of aesthetics, and a desire to create a strong, memorable identity.

"Owners and developers believe, too," notes Hunner, "that if they create a more enjoyable work environment, employee satisfaction and productivity will improve.

"Companies are finding that a lower profile in a more natural setting is a good way to keep neighbors—especially residential property owners—happy."

Telephone problems

■ According to a recent update by the American Association of Nurserymen, there have been recent reports of problems emerging from telephone sales of herbicides. The problems include: general sale of products not registered in most states, over-pricing, watered-down products, and false claims concerning efficacy.

"Products are delivered collect, and when true nature of herbicide is determined, refund is virtually impossible to obtain," says the update.

The AAN suggests that herbicide purchasers deal with known distributors and avoid buying from unknown telephone vendors.

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WT&T

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Photograph Courtesy NASA

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6-2725

Scotts ProTurf

Larry, what makes Fairway Fertilizer with TGR™ Poa Annua Control so different from other weed control products? "Instead of acting like a conventional herbicide, the new Scotts product *slows* the growth of the *Poa* plant, diminishing its competitive ability. The result is a gradual, more natural transition to desirable grasses without a sudden decrease in playing surface quality."

That really changes the way you think about growth regulators. How does it fit in with current turf management practices? "Fairway Fertilizer with TGR Poa Annua Control has proven to be effective in reducing *Poa* populations even under conditions that would normally enhance their growth. Extensive testing has shown that this product fits in with a range of different management practices. Treat your turf with successive fall and spring applications until the *Poa annua* has decreased to the desired level."

What about those ugly *Poa annua* seedheads? "A significant benefit of the new product is a reduction in the visibility of *Poa annua* seedheads after one application. When applied before seedhead emergence in the spring, the treatment will slow the emergence of the seedhead stalk, resulting in fewer visible seedheads and more uniform turf color and playing surface."

How about color response? "This formulation provides not only selective control of *Poa annua,* but also extends the greening response well beyond what an equal rate of fertilizer alone can achieve."

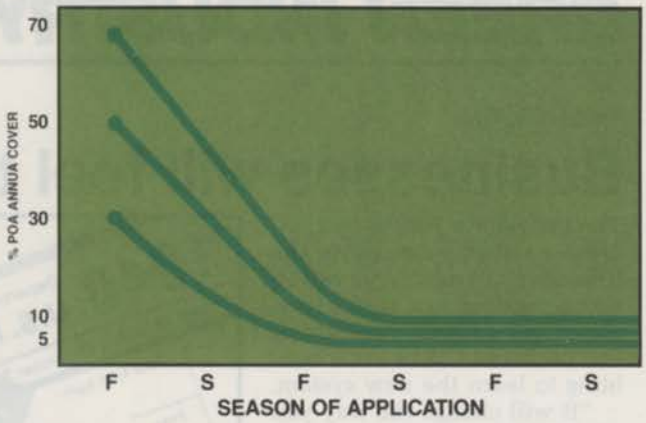
For more information on Scotts new Fairway Fertilizer with TGR Poa Annua Control, call your ProTurf Tech Rep. Or call Scotts direct at 800-543-0006. In Ohio, call collect (513) 644-2900.

"Now, with Scotts® new TGR*™ technology, you can outgrow your *Poa annua* problems."

Dr. Larry Widell, Scotts Research project leader (Plant Growth Regulator R&D), talks about new **Fairway Fertilizer with TGR™ Poa Annua Control.**

*Scotts trademark for its turf growth regulator technology

Aggressive bentgrass can be seen encroaching into an area of *Poa annua* treated with ProTurf Fairway Fertilizer with TGR Poa Annua Control.



Typical *Poa annua* population suppression is shown over time with continued use of Scotts Fairway Fertilizer with TGR Poa Annua Control. The degree of control may be influenced by turfgrass management techniques, climate, soil type and *Poa annua* biotype.

The treated area (left) in this mixed *Poa annua*/bentgrass fairway has been converted to predominantly bentgrass after three applications.

Notice the selective elimination of the *Poa annua* and the increased greening of the treated plots 7 weeks after application to a mixed stand of perennial ryegrass, Kentucky bluegrass and *Poa annua*.

Fewer seedheads are apparent in fairways when treated in the spring. The lens cap indicates the upper right corner of the treated plot.

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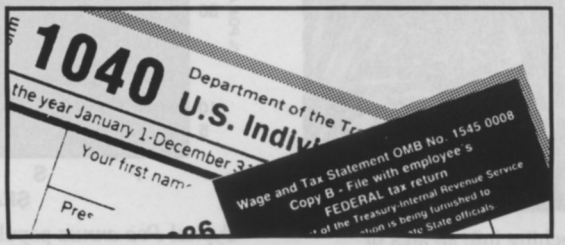
TAX REFORM

Businesses will feel the bite from reform



The tax reform passed by Congress in 1986 represents the broadest change in taxation since income tax was introduced. As a result, individuals and businesses alike are scrambling to learn the new system.

"It will change the way you do business planning," says Michael E. Mares, a partner in the Virginia-based accounting firm Rauch, Witt & Co. Taxes on capital gains from selling assets have increased roughly 12 percent from last year. Tax credits for equipment purchases have been repealed retroactive to Jan. 1, 1986. Credits from prior to 1986 will be cut 35 percent. In addition, the equipment depreciation period has been stretched from five to seven years, with lower deductions in the first two years, increasing taxes. However, the expense amount on equipment purchases has been increased to the first $10,000 spent, up from $5,000. "The remaining (expense) is depreciated over the seven years," Mares explains.

Deductions for miscellaneous business expenses have been nearly eliminated: if they exceed two percent of business income, the amount above that two percent can be deducted. The deduction for a business meal has also been cut to 80 percent.

Also, says Mares, "The Internal Revenue Service now has the authority to disallow what they consider to be lavish and extravagent meals and other forms of entertainment. It is going to be interesting to see what some revenue agents think are lavish and extravagent and what we as taxpayers think are lavish and extravagent," he comments.

Mares' accounting firm has published a booklet outlining changes in the tax structure, but he recommends seeking professional advice when preparing taxes for a detailed explanation of changes.

Though the tax structure is set for 1987, further changes may be in store. Mares says 40 tax ammendment bills have already been introduced in Congress this year.

Mares spoke on the topic at the 1987 Virginia Turfgrass Conference.

RESEARCH

Yet unfound: answers for 'black layer'

One of the most heavily-attended sessions at the most recent Virginia Turfgrass Conference was what was originally intended to be a panel discussion of summer decline of bentgrass. Prompted by questions from concerned superintendents, the session ended as a discussion of the progress on finding a cure for anaerobic black layer.

Seated on the panel were Drs. David Chalmers and Houston Couch of Virginia Tech University; Clinton F. Hodges of Iowa State University and Leon T. Lucas of North Carolina; State University.

Left to right, Drs. David Chalmers, Houston Couch, Virginia Tech University, Clinton F. Hodges, Iowa State University and Leon T. Lucas, North Carolina State University, prepare for their panel discussion.

While the panelists said progress was being made, none could provide a conclusive solution to the problem, which has taken out a number of greens on courses throughout the country.

The panelists concluded that excess water is not the only factor causing the disease, and the problem, though more prevalent in sand-based greens, is not limited to them.

Hodges reported that there is a connection between the black layer and algae presence. The algae feeds off of calcareous sand, present in many sand bases, creating a film layer which anaerobic organisms feed on.

Hodges suggested checking the sand base for calcium presence, and checking irrigation water—especially if it comes from a pond or lake on the course—for algae content. Using algae-free water is a benefit, he added.

Chalmers recommended using cultural practices to at least isolate the problem. Aerification, he said, has shown good results.

Couch said he believes the eventual cure for the problem will be a chemical one. He added that he and Hodges are seeking funding for a joint research project to further study black layer.

A candidate sets bricks in a running bond pattern according to specifications in the brick-on-sand portion of the CLCA's certification test. The exam took place last October at Football College, Los Altos.

ASSOCIATIONS

California leading the way in certifying its contractors

Landscape contractors in California are among the most organized in the country. Twice each year, the California Landscape Contractors Association conducts a two-day test to certify qualified contractors.

The exam consists of 15 hours of timed, hands-on work on 30 problems in eight major skill areas. The skills are: plan reading, irrigation installation, plant installation, concrete installation, grading and drainage, brick-on-sand construction, sand box construction and sod installation.

Seventy-one contractors have earned the "Certified Landscape Technician" title by passing the test since it was first administered in 1984. It is open to any landscape worker or contractor who meets certain experience, age and education requirements.

The next test is being given next month in southern California.

Application information is available from CLCA headquarters, 2226 K Street, Sacramento, CA 95816. Phone number is (916) 448-CLCA.

LITERATURE

Bats in the attic? Woodchuck woes?

Are raccoons or moles ruining the turf of one of your most valued clients? Don't know what to do? Now there's an answer to your problems.

Rich Patterson, a professional naturalist and director of the Indian Creek Nature Center in Cedar Rapids, Ia., has written a booklet called *There's a Bat in the Attic and a Woodchuck in the Garden*. He describes the life history and suitable control methods for 12 types of wildlife that commonly occur in suburbia. Research and writing of the booklet was sponsored by the Iowa Science Foundation.

The solutions Patterson suggests are designed to be long lasting and non-violent to individual animals, since they generally involve altering the animal's environment.

Animals covered in the booklet include snakes, squirrels, raccoons, woodchucks, cottontails, moles, gophers, mice, woodpeckers and bats.

"When people discover damage," Patterson says, "they are often annoyed or afraid. Their first reaction is usually to kill the offending animal, even though this often does not solve the problem for long."

To effectively reduce pest damage it is necessary to understand the life history of the animal causing a problem and choose control methods that are suitable, Patterson says.

The booklet is available at cost. To order, send $5 to the Indian Creek Nature Center, 6665 Otis Rd., SE, Cedar Rapids, IA 52401.

1-2-3

Dr. Gary Smith of the University of Maryland told Maryland Turfgrass Conference attendees that the best way to avoid chemical accidents is to avoid having materials left over.

Many accidents occur in mixing and filling sprayers, he said. He noted two procedures that create safer conditions:

1. Use a pump or pressure-operated system to transfer material to the mixing tank.

2. Make drive control your number-one priority. Do this by buying the correct size sprayer.

Smith also says that proper clothing protection is crucial. Here are the precautions he listed:

1. Always wear a full face shield. The forehead absorbs chemicals four times faster than the forearm.

2. Wear a rubber apron, not a synthetic apron. The groin area absorbs chemicals 12 times faster than the forearm.

Though Smith didn't touch on them, here are some tips for keeping respirators safe:

- Each person must have and be responsible for an individual respirator.
- Keep respirators stored in the original box or a plastic container.
- Different pesticides require different types of respirators.
- Wash respirators after every use, and change filters frequently.
- All employees should know the local telephone emergency numbers.
- If a co-worker must be taken to the hospital, the doctor will need to know vital information on the chemical involved. Take the label to the hospital.
- First aid kits should be kept in the truck at all times.
- At least one person on every crew should be trained in first aid and CPR.

PESTICIDES

On communicating product safety

Dr. Terry Witt, manager of public relations for North American products at Dow Chemical USA, predicts the future of communicating product safety to the customer. Here is what he says:

First, there will be pressure at all governmental levels, from local to federal.

Second, there will be an increased emphasis on right-to-know from workers, the community and customers.

Third, there will be an increased number of liability lawsuits, more health surveys, and groundwater concerns.

Dr. Witt also outlined lessons that landscape managers who deal with pesticides should have learned by now:

- It is everybody's problem in the landscape industry.
- Science is not the problem—public opinion and politics are the name of the game.
- Benefits must be explained.
- Coalitions at all levels are a necessity.
- The public's concerns must be addressed.
- Media is not the enemy; the industry must learn to work with the media.
- There is also a need to work with public interest groups.

CONFERENCES

Warning: be ready to anticipate problems

Because of the drought conditions that prevailed in much of the country last year, landscape managers are going to have to anticipate problems with some of the plantings they did on projects last year, says Ethyl Dutky of the University of Maryland.

"Suspect problems with plants that were transplanted," she says. "Dieback and declines from borers and root diseases will point out plants that will be problems. You should be anticipating buying some replacements."

Dutkey offered her comments at Maryland's Turfgrass '87.

CULTIVARS

National Arboretum develops new cultivars

The United States National Arboretum has introduced several new cultivars, including four species of Crape-Myrtle.

The Shoshni is a dwarf vibernum more suited for residential landscaping than its larger relatives. It produces smaller flowers, a longer-lasting scarlet-red fruit and purple-red foliage along its distinctive horizontal branches. A dense growth habit makes it adaptable to varied landscape uses.

The four new varieties of Crape-Myrtle are Acoma, Hopi, Pecos and Zuni. All four are semi-dwarf cultivars combining mildew resistance, dark green summer foliage and autumn coloration. Their flowers range in color from white to lavender, making them excellent for landscaping, as the larger varieties are in the South.

Another introduction from the Arboretum is a triploid cultivar of hibiscus called Minerva. They are tolerant to pollution and light frost, have a compact growth habit, are sterile and will bloom for four months or more.

continued on page 16

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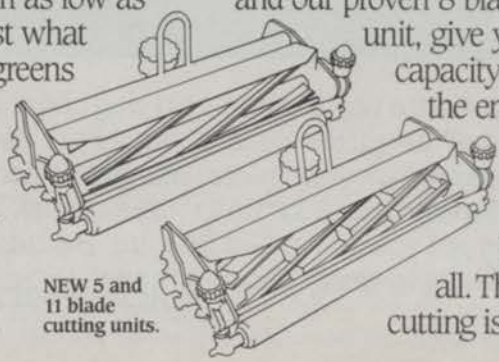
No matter what your height of cut requirements are, the Greensmaster 300 measures up. *Or* measures down. That means cutting versatility from as low as 3/32″ up to 11/16″. Just what you need to cut your greens to tournament standards and deliver a precision cut to aprons and tees as well.

New cutting units and Toro's Variable Speed Kit.



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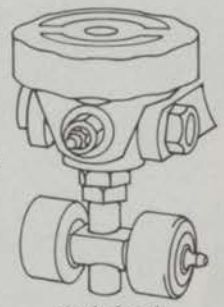

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Additional cutting versatility at the flip of a handle.

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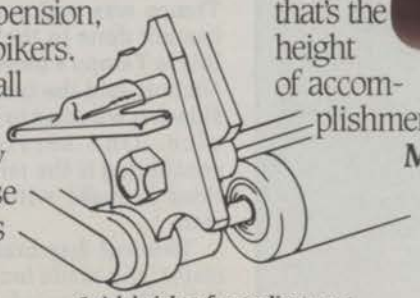

Quick height-of-cut adjustment.

Greensmaster 300.

More information available from your Toro Distributor. Contact your local Toro distributor for additional information or a demonstration. Or write The Toro Company, Commercial Marketing/Dept. G3, 8111 Lyndale Ave. So. Minneapolis, MN 55420.

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SHORT CUTS

HURRY-UP...OR LEAVE... Not long ago, the Los Angeles Recreation and Parks Department proposed a rule that would limit golfers to 4½ hours to play 18 holes on municipal courses. According to the department, some golfers take as long as six hours. Martin Tregman, president of the L.A. Municipal Golf Association foresees troubles, though. "I don't think they (golfers) can be put off forcibly without real problems," he observes. One golfer who was asked to leave a course (for not having proof he paid his greens fee) clobbered the course employee with a golf club, fracturing the employee's skull. "We don't want people getting killed," Tregman says.

THANKS TO FRED... Upon recommendation of its turfgrass division, the Crop Science Society of America's board of directors has approved as a C.S.S.A. award the Fred V. Grau Turfgrass Science Award. The award will be presented in recognition of significant career contributions in turfgrass science. Grau, 85, has devoted most of his life to turf and is presently executive director of the Musser International Turfgrass Foundation.

WINTERTIME BLUES... Many portions of the country had particularly cold winters, especially in the mid-South. Horticulturists know that if there's wind and low humidity, there's little danger of frost. But in 40-degree temperatures with no wind and high humidity, there's a good chance of frost that can result in damage to delicate ornamentals. "It's an art and a science to escape cold-weather damage," says Norm Freel of Florida's Cypress Gardens. "We work closely with the National Weather Service. Wind direction, cloud formations, humidity and air pressure are also taken into consideration." As guard against loss of plant materials, the Gardens have installed a series of ground pipes to which heaters can be attached and raised as high as the treetops, if necessary.

'THAT'S A BIG TWINKIE'... In just one year, American industry produces between 70 billion and 90 billion pounds of hazardous waste, according to information from Georgia Tech. That's 300 to 400 pounds for every person living in the U.S. And by the year 2000, Georgia Tech says, that number could double. It's no wonder the EPA has taken a hard look at the problem of disposal.

NEVER TOO LATE... An event which escaped these pages was the presentation of the first "Excellence in Turf Grass Research Award" at the 1986 GCSAA show. It went to Dr. C. Reed Funk of Rutgers University. In making the presentation, Mike Robinson of Seed Research of Oregon said, "His tireless and unselfish dedication to the improvement of turfgrasses has produced the tremendous array of outstanding varieties available for the demanding needs of today's turf manager." WT&T apologizes for the oversight. We'll have announcement of the second annual award next month.

NEW VARIETY... To honor the memory of Peter Selmer Loft, a new tall fescue variety, "Tribute," will be introduced by Lofts, Inc. late in 1987. The company also honors its former president with annual scholarship presentations.

CULTIVARS *from page 12*

Naragansett is a variety of crabapple introduced by the Arboretum. It has multiple disease resistance and excellent landscape characteristics.

For further information on these and other cultivars, contact horticulturist Donald Egolf at the U.S. National Arboretum, Agricultural Research Service, USDA, Washington, DC 20002.

ATHLETIC TURF

Don't throw away those valuable blue tags!

Blue tags from some named varieties of certified turfseeds are worth money. The Mussser International Turfgrass Foundation (MITF) and National Sports Turf Council (NSTC) are collecting the blue tags to raise money for turfgrass research.

Dr. Fred Grau, executive director of MITF, says the money raised from donated tags will train students in turfgrass science or be used for research and education for better turf and safer sports turf.

Don't throw the tags away. Donate them to the MITF/NSTC.

Send tags to: MITF/NSTC, 4604 Amherst Rd. (for UPS), P.O. Box AA (for mail), College Park, MD 20740.

ACQUISITION

Barefoot Lawn acquires Tempo 21

Worthington, Ohio-based Barefoot Grass Lawn Service has acquired two branches of Tempo 21, based in Wheeling, Ill. By merging Barefoot's three Chicago-area branches with the two from Tempo 21, the company will increase its national customer base to about 150,000.

According to Barefoot's Don Nichols, the Tempo 21 merger nearly doubles the market share and customer base in the Chicago area, adding 15,000 customers. This makes Barefoot the second largest lawn care company in the area, Nichols said.

He added that the acquisition brings a number of services that Tempo was performing that Barefoot has not done in the past. Included in this is Tempo's mower repair service. Nichols said the company is still considering whether to continue this service. One service Barefoot is continuing is the telemarketing functions brought with Tempo, Nichols said.

Barefoot has branches serving 23 states, and made *Inc. Magazine*'s 1986 list of the nation's fastest growing pri-

Wouldn't it be great if your old standby broadcast herbicide could also handle early-emerging HTCs*?

*Hard-to-control weeds like oxalis, ground ivy, prostrate spurge and wild violet.

Circle No. 118 on Reader Inquiry Card

vate corporations. Nichols adds that while no more acquisitions are planned, "should the right match come along, we'll certainly take a look at it."

RESEARCH

Certain ornamentals resist salt water

Certain varieties of popular landscape plants are more tolerant to saltier irrigation water than previously believed. This according to research done by water management scientist George Fitzpatrick of the Institute of Food and Agricultural Sciences' Research and Education Center in Ft. Lauderdale, Fla.

The research was prompted by conditions in Florida at certain times of the year resulting in freshwater shortages and saltwater intrusion.

Fitzpatrick's research was done on areca and paurotis palms, buttonwood and orange jasmine using varying saline levels in the water. Levels ranged in concentration up to 10,000 milligrams per liter. (Tap water on the average has 100 mpl.)

Buttonwood showed no adverse effects up to the highest saline level. Paurotis showed effects at 5,000, while arecas made it to 2,400. Orange jasmine had the lowest tolerance, dying at 1,200 mpl.

Fitzpatrick is continuing tests on other varieties of ornamentals in hopes of providing some guidelines for landscapers in the lucrative Florida market.

4-Foot Workhorse

Kees rugged 48" mower puts nearly 14 acres of manicured turf behind you in an 8-hour day. This durable 48" unit comes standard with your choice of an 11 h.p. Briggs I/C or Honda synchro-balanced engine, or a 12.5 h.p. Kawasaki engine. For even greater ground speed and mowing capacity, choose the optional 14 h.p. twin cylinder Briggs and Stratton I/C engine with electric start.

This hard-working unit features a fully baffled underdeck, and three Ultra High Lift blades for even cutting and efficient discharge of clippings.

Its four forward speeds and six cutting heights give you the flexibility to handle a wide range of cutting conditions. With the convenient fingertip controls, and the optional 2-wheel sulky with high-back seat and extra-wide pneumatic tires, the operator of the 48" can ride all day in comfort.

There's a Kees Mower for every job. Choose the one that's right for you — 21", 32", 36", 48" or the big new 60" model. But choose Kees, because we know what you want in a commercial mower.

Built by Professionals ...for Professionals.

KEES™ SINCE 1874

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Beatrice, Nebraska 68310

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GOLF COURSES

Calesthenics do the trick here

The golf course that does calesthenics together suffers fewer accidents together.

At least that's what D.J. Pakkala says.

Pakkala has had the employees of The Vintage Club in Indian Wells, Calif. doing calesthenics together first thing in the morning, and he reports a notable decrease in on-the-job accidents.

"You do it after they punch in—on company time," Pakkala told visitors to the GCSAA conference and trade show in Phoenix, Ariz. "It's also a good time for a pep rally.

"It really gets the blood and juices flowing. They leave at 6:10 and they're ready for the day."

AWARDS

NRVMA award series presented for first time

The National Roadside Vegitation Management Association presented its first annual excellence awards to individuals from academia and the government. The Excellence in Roadside Vegitation Management awards for 1986, presented in conjunction with Monsanto, went to nominees from state transportation departments, county highway departments, university researchers and custom applicators nationwide.

Indiana Department of Highways director John Isenberg won in the state category, and Jim Erwin, Douglas County (Oregon) Road Department, won in the county category. North Carolina State University professors Joseph DiPaola, William Gilbert and William Lewis shared the academic honors.

A five-person committee representing management, academia, media, government and industry evaluated all nominations with respect to innovation, environmental impact, economics, safety and aesthetics.

Nomination forms for the second

Introducing your new old standby.

That old standby broadcast amine turf herbicide of yours has just been made obsolete with new TURFLON* II Amine Herbicide from Dow.

Stops HTCs in the broadcast round

You see, TURFLON II does everything your old standby does, and a whole lot more. Like control those hard-to-control weeds that can emerge early and sneak through your old standby. Weeds like oxalis, ground ivy, prostrate spurge and wild violet. Weeds that keep your phone ringing and your cash register quiet.

New turf chemistry

With TURFLON II you can stop those early-emerging, hard-to-control weeds in their tracks and significantly reduce the need for spot treating later. TURFLON II does so much more than other broadcast herbicides because it contains triclopyr, the first new turf herbicide chemistry in 16 years.

Safety tested

The low volatility of the TURFLON II activated amine formulation gives you less odor to worry about. It has a proven safety record and won't migrate in the soil to the roots of ornamental plants.

So if you're tired of being let down in the broadcast round by your old standby, turn to TURFLON II this year.

TURFLON II

It's your new old standby.

DOW*

*Trademark of the Dow Chemical Company

6006

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annual awards series can be obtained from: NRVMA Awards Program, c/o Dorf & Stanton Communications, 111 Fifth Ave., New York, NY 10003.

TOURNAMENTS

John Deere sponsoring pro/super tournament

The Golf Course Superintendents Association of America and John Deere & Co., have combined to participate in a golf tournament created by Deere.

The John Deere/PGA Professional-Superintendent Championship will feature four-man teams composed of a clubs PGA professional, the course superintendent, club president and manager.

Teams will compete in a scramble format beginning with qualifying rounds held regionally from June until September at the 41 PGA sections nationwide, and ending with a two-day, 36-hole championship set for November. Exact dates and locations will be announced later.

"This program provides an opportunity for the club pro and superintendent to play together on a team with other club officials," said Gary Gottschalk, golf and turf manager for Deere.

"This will be a tremendous impetus in bringing together the key people who run the nation's golf clubs," added Micky Powell, 1986 PGA president.

INDUSTRY

Industry Task Force questions 2,4-D study

An interim report summarizing research by the Industry Task Force on 2,4-D has thrown doubt on the National Cancer Institute's study on possible links between 2,4-D and increased risks to certain forms of cancer.

The report questions the validity of figures presented in the Kansas Study, as the NCI report has become known.

In an effort to distribute information from the Task Force study, the Pesticide Public Policy Foundation (3PF), headed by Dave Dietz, has been distributing copies of the Task Force summary to foundation members and other interested parties.

continued on page 22

GET OUT OF THE DARK.

Open your eyes and see just how many subjects are covered in the new edition of the Consumer Information Catalog. It's free just for the asking and so are nearly half of the 200 federal publications described inside. Booklets on subjects like financial and career planning; eating right, exercising, and staying healthy; housing and child care; federal benefit programs. Just about everything you would need to know. Write today.

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TENNANT® 140 cleans 37" path with optional side brush, more than 15,000 sq. ft./hr. In less than 15 minutes, does 1-hour hand sweeping job. Powerful vacuum/filter system controls dust. Self-propelled, easy to operate. Choose gas or quiet, fume-free electric.

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For a job like this you need an engine you can depend on. You need a Kohler Magnum engine.

All Magnum engines feature electronic ignition for fast, sure starts. Twin cylinder models include full pressure oil lubrication, with automotive-type oil filters. Additional features include dual element air cleaning, PosiLock™ connecting rod cap, optional Oil Sentry™ low oil sensing and a two year warranty that covers commercial use.

Magnum engines range from 8-20 H.P. in horizontal and vertical shaft designs.

We designed Magnum engines to require fewer service parts and less routine maintenance, so your equipment will spend less time in the shop and more time on the turf.

To find out how you can benefit by having Magnum engines on your equipment contact: Kohler Engine Division, Kohler Co., Kohler, WI 53044, 414-457-4441.

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Built for a hard day's work.

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In a letter accompanying the report, Dietz said, "After careful review of this information, I believe you will be able to make an informed decision about this issue of impact on 2,4-D."

Dietz has appealed to green industry members to speak up on the benefits and safety of 2,4-D before "unwarranted and precipitous actions prevail, circumventing a just conclusion," he said.

"If we do not make ourselves heard at the state or provincial and federal levels of government, those who regulate our industry will have little choice but to act according to input from those who have," Dietz said. "We can sit back and let our future be dictated by others, or we can make the voice of the 'silent majority' be heard."

CHEMICALS

Diazinon still in use after ban appealed

The insecticide diazinon will be available for use on golf courses and sod farms at least until this summer.

The product's status is on "hold" because of appeals by the chemical's manufacturers to the EPA. Hearings are not expected until late summer or fall, according to information from Ciba-Geigy.

"As the nation's largest supplier of diazinon, we're taking the lead to defend the product," says Dick Feulner, Ciba-Geigy director of regulatory affairs. "We have years of research data on the safe use of diazinon."

There had been some confusion concerning the status of the chemical. In an effort to inform the public of diazinon's status, Ciba-Geigy held a press conference January 31, during the Golf Course Superintendents Association of America conference in Phoenix, Ariz.

At the press conference, Ciba-Geigy officials said they conducted a biolife investigation and found that four of the 40 birdkills were the result of deliberate misapplication. Twenty-two were intentional misapplication, one was not the result of diazinon use, and just two were apparent proper applications. Circumstances were unknown in the remaining 11 instances.

The EPA proposed cancellation of diazinon in December, 1986, after receiving reports of bird kills allegedly resulting from exposure to the chemical. The company maintains that diazinon is safe when applied properly. Ciba-Geigy intends to present research at upcoming EPA hearings verifying the product's safety.

Nonetheless, the company has adjusted its labeling rates to four pounds of active ingredient per acre, down from six. The company maintains that the effectiveness will only drop off slightly as a result of the change.

RESEARCH

Fungicide combinations effective in control

A more effective control of some turf diseases can be accomplished using certain fungicides in combination. This was the recommendation made by Dr. Anna Marie Pennucci at the GCSAA Show in Phoenix, Ariz., in January.

In a talk concerning tank-mixing, she suggested that by mixing the fungicides, rates could be reduced, adding that alternating fungicides produced the best results.

Pennucci, a professor at Southern Illinois University, Carbondale, conducted her research in the Northeast, and, she added, her research applies only to cool season climates.

continued on page 27

The 50" cut ZTR 501 with state-of-the-art hydrostatic drives. Top flips up for easy service access.

DIXON ZTR® MOWERS JUST TURNED PRO.

Dixon pioneered zero turning radius mowers a decade ago. And now Dixon has expanded that idea into a 50" cut professional model: the 18-hp ZTR 501.

It's the only professional mower that cuts as closely and moves as nimbly as a Dixon — to cut mowing time by as much as half. And it's engineered and built to maintain its precise handling and performance for many years. See your Yellow Pages, or write: Dixon Industries, Box 494, Coffeyville, KS 67337-0494.

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ZERO TURNING RADIUS MOWERS

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Look closely at this course. No dollar spot in sight. Not even resistant dollar spot, thanks to Rubigan.

Rubigan controls dollar spot on your tees, greens and fairways for only about 10 cents per 1,000 square feet per day. That's all. And you get a full 28 days control with just one 0.4 oz. application per 1,000 square feet.

Now look closer. Notice there's also no fusarium blight, necrotic ring spot, summer patch or take-all patch. And no large brown patch, either, with a Daconil 2787® tank mix.

Only Rubigan is labeled to prevent and treat all these harmful diseases. No wonder Rubigan is the superintendents' choice for dependable dollar spot control in all types of weather.

This year, make your course look this spotless. Make it dollar spotless with Rubigan. See your Elanco distributor. Or call toll-free: 1-800-ELANPRO. In Indiana, call collect: 317-261-6102.

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Dollar spotless.

Ford shapes the American landscape

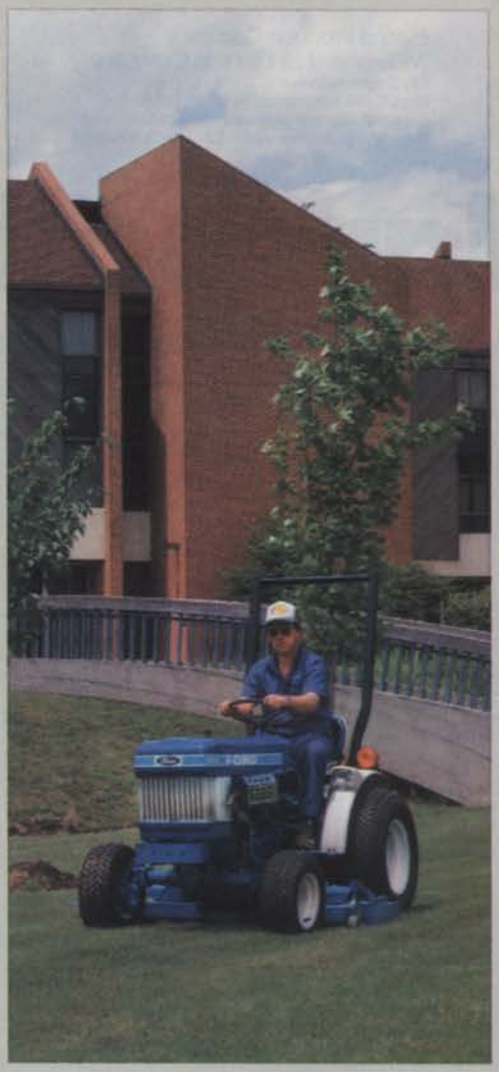
Industrial tractors

Big site preparation projects require a tractor with extra strength and performance... and that's exactly what a Ford industrial tractor or tractor-loader offers.

Four heavy-duty diesel models are available with 49 to 63 SAE net horsepower. Tractor-loaders offer up to 4,500 lbs of lift capacity, with single-lever loader control and return-to-dig.

Choose from three power-matched transmissions–4 speed torque converter, dual range 8-speed, or manual-reversing 6x4.

Ask your dealer about the Ford Extended Service Plan. ESP covers many specific repairs for 36 months or 2,500 operating hours, whichever comes first. At a modest cost, it's smart protection for your rig.



Compact tractors

Hardworking Ford 1000 Series diesel tractors are ideal for a wide range of mowing, loading and site preparation jobs.

Choose from six models, 13 to 32 engine horsepower. Standard equipment includes important features like 540 rpm PTO, Category I 3-point hitch, full-time live hydraulics and a 10 or 12-speed transmission.

Options include front-wheel drive. Hydrostatic or Synchronized Manual Shuttle transmission, depending on model. Creeper speeds. And turf tires. Over 50 matching attachments and implements are available, including 15 different mowers.

Tractor-loaders

You can equip virtually every Ford tractor with a matching Ford loader. These quality loaders combine strength with smooth control. Double-acting lift and dump cylinders are standard. Lift capacities range from 530 to 5,000 pounds. All loaders offer a choice of buckets.

Quik-Tach loader models for many tractors make for great flexibility. You can easily mount or remove the loader to suit the work at hand.

Ford also offers many other attachments for grounds maintenance work: rotary cutters, flail mowers, front and rear blades, landscape rakes, scoops and posthole diggers.

A nearby Ford Tractor dealer is your one-stop source for equipment, parts and service

Industrial backhoes

With a Ford industrial backhoe-loader, you'll be well equipped for trenching, drainpipe installation and other heavy-duty earthmoving jobs.

With Ford you can count on awesome power and precise control. The 14-foot backhoe gives you 9,735 pounds of digging force, and the 12-foot model 8,800 pounds.

Two or four-lever controls offer precise operation. Ten-foot stabilizer spread provides a wide stance. A selection of buckets lets you equip your backhoe for a variety of digging jobs.

New mid-range tractors

The new Ford II models are versatile tractors that make short work of big-area mowing, loading, site preparation and other tough jobs. They're easy to operate and offer excellent all-around performance.

Choose from five diesel models from 34 to 60 maximum net engine horsepower. Standard equipment includes 3-point hitch, independent PTO, and power-assist steering. A new optional cab on selected models makes them an excellent choice for snow removal work.

Other options include front-wheel drive, synchromesh transmission, and turf tires.

Ford also offers 40 and 60 maximum SAE net horsepower low-center-of-gravity Ford II tractors.

Skid-steer loaders

You can cut your costs and increase productivity with New Holland Super Boom loaders. High-capacity hydraulics handle a variety of attachments including tree spades, backhoes, pallet forks, landscape buckets, trenchers and posthole diggers.

Eight models available with operating loads from 600 to 2,050 pounds.

To find out how much better a skid-steer loader can be, see your New Holland dealer.

Your Ford Tractor dealer is listed in the Yellow Pages under "Contractors' Equipment & Supplies" and/or "Tractor Dealers."

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Ford

FORD

NEW HOLLAND

IT'S HELL ON ORDINARY TRIMMERS.

"We went through a trimmer every six months!" complained Doug Cole of Commercial Lawn, Inc., in Colonial Heights, Virginia.

Even though his crew used the best units from one of the leading lines, a nearby 110-acre cemetery kept knocking them dead.

"The trimmers have to run at full power for the greater part of the day. That's most of the problem. Every six months we could count on a visit to our local power equipment dealer."

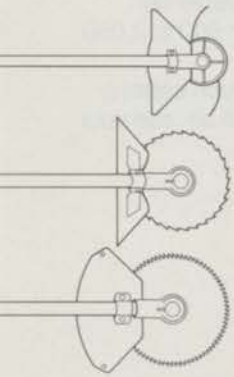
Then, they changed trimmers.

SHINDAIWA BEAT THE GRIM REAPER.

"Our dealer in town talked us into field-testing a Shindaiwa C-35. On the basis of that trial we bought eight trimmers. We've never had to replace one. It's going on five years."

Over pretzels and a cold Bud, Doug and his crew would probably tell you a heck of a lot more.

Like how much more quiet our trimmers are. How light and easy they are to work with. And he'd swear by their easy maintenance features like electronic ignition and easy-on,easy-off diaphragm carbs.



Our entire pro line has interchangeable heads.

ONE PULL WINS YOU OVER.

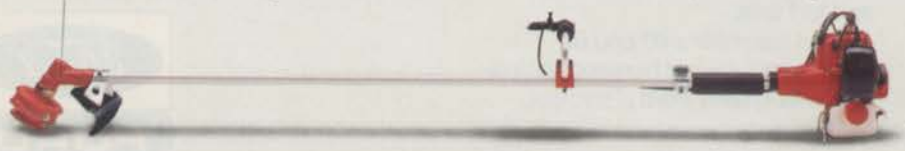
If you're having trouble with your trimmers, field-test a Shindaiwa. You'll likely become a believer from the first pull. Even fresh out of the crate, it starts the first time.

But one pass through a tough stand of Devil's Weed will convince anyone. Our B-45, for example, churns out almost two and a half horsepower from 41.5cc. The T-20 over one horsepower from just 20cc. And the easy power breeds confidence in experienced hands.

WE REST OUR CASE.

Doug's story is no isolated testimonial. We hear the same thing from highway crews, from campus maintenance departments, from farms, stables, and golf courses.

So see for yourself. Field-test one on your own. Before you wind up mourning over an ordinary trimmer.



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WE SIMPLY MAKE THEM BETTER.

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Fungicide Combinations for Control of Dollar Spot

Combination	Ounces/ Square Feet	Percent of Disease in Turf After Treatment
Tersan 1991 + Chipco 26019	2 + 2	0-2
+ Daconil	2 + 4	0-0
+ Dyrene	2 + 4	0-2
+ Vorlan	2 + 2	0-0
Bayleton + Chipco 26019	1/2 + 2	trace-1.5
+ Daconil	1/2 + 4	0-1
+ Dyrene	1/2 + 4	0-1
+ Vorlan	1/2 + 2	0-0
Rubigan + Chipco 26019	1/2 + 2	0-2
+ Daconil	1/2 + 4	0-trace
+ Dyrene	1/2 + 4	1.5-3
+ Vorlan	1/2 + 2	0-0
Banner + Chipco 26019	1/2 + 2	0-1/2
+ Daconil	1/2 + 4	0-trace
+ Dyrene	1/2 + 4	0-1/2
+ Vorlan	1/2 + 2	0-0

Fungicide Combinations for Control of Brown Patch

Tersan + Chipco 26019	0-2
+ Daconil/Dyrene	0-1
+ Vorlan	0-1
Banner + 26019	0-1.5
+ Daconil/Dyrene	0-3
+ Vorlan	0-2
Rubigan + Chipco 26019	0-1
+ Daconil/Dyrene	0-1
+ Vorlan	0-2

FUNGICIDE *from page 22*

"There are things to consider when mixing more than one at a time," she said. Considerations include compatability, phytotoxicity and clumping in the tank. But, she said, "For cool season climates, the best control is by tank mixing."

She pointed out a number of benefits from using two fungicides at once. They result in better control, longer residual (21-60 days), less chance of resistance, and the ability to eliminate more than one disease.

Using tank mixes, she said, is good for controlling diseases with short intervals between spore generations, and those with persistent, long-lived mycelium, such as dollar spot.

Pennucci's studies show that Vorlan in combination with either Tersan, Bayleton, Rubigan or Banner, gave the best control (see chart). Other combinations provided adequate control.

She noted, however, that there seemed to be no combination that would provide total control of brown patch. "There was no constant control of brown patch in 1986," she said.

AN OFFER THAT MIGHT SAVE YOU MORE THAN MONEY.

If you buy a Shindaiwa C-35, T-25 or T-20 from one of our dealers, we'll send you a set of Shindaiwa Protective headgear free. The hinged face shield and comfortable ear muffs make it easy to wear for long periods. Made in Sweden, a $19.95 value.

Mail this coupon with your original receipt bearing the dealer name to:
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Dealer _____ City _____

(All the above information must be completed. Copies of receipt and coupon not valid. Allow four to six weeks for delivery of headsets. Offer void where prohibited.)

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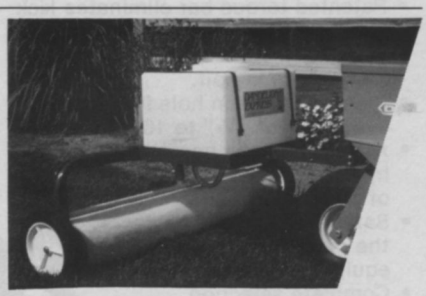

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Danville Express No-Drift Direct-Lawn Applicator

Danville Express makes chemical application safe, fast and easy. This cost efficient no-drift roller applies liquid herbicides or fertilizers even and precise without harmful overspray.

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GRUB CONTROL

New approach taken in controlling grubs

Dr. Daniel A. Potter, an entomologist at the University of Kentucky, has been studying the one-year life cycle and living habits of grubs in hopes of using biological rather than chemical control on the pests.

He has found that grub eggs absorb water, requiring a minimum of 10 to 11 percent soil moisture to grow. "I was interested in how zero moisture would affect these eggs," Potter comments. During a drought-stressed period in 1983, soil moisture content dropped to eight to 10 percent, with soil temperatures in the top inch reaching 109 degrees Fahrenheit. "We found no egg survival in non-irrigated drought-stressed areas," Potter comments. In irrigated areas with moisture at 21 to 24 percent, egg survival rate is 75 percent, he adds.

Also, in naturally drought-stressed turf, survival rate for newly-hatched grubs was just 1.7 percent; it was 70 percent in irrigated turf.

Unfortunately, the turf's tolerance to grub damage lowers if it is not irrigated, able to handle only eight to 10 grubs per sq. ft. before showing signs of injury. The irrigated turf can handle 15 to 20 grubs per sq. ft.

"There is a direct inverse relationship between the problems people are having with white grubs and the amount of rainfall occurring in the late summer and early fall," Potter says. Potter has also studied other means of control.

"Females are extremely attractive to males," Potter comments. "They're really turned on by the smell that appears to be coming from the female beetle." By putting females in a trap, Potter says, he caught "lots and lots of beetles." He has also rinsed the females with a solution, which has also been used to catch the males.

Potter believes his research will carry a number of benefits. "The most interesting prospect is perhaps in risk assessment," he says. "If a cheap knock-down cardboard trap can be made for about a dollar, this could be used by homeowners, by lawn care applicators, by golf course superintendents to hang out for the purposes of risk assessment. If you don't catch any beetles, you don't have to spray."

Potter spoke on the subject at the Virginia Turfgrass Conference.

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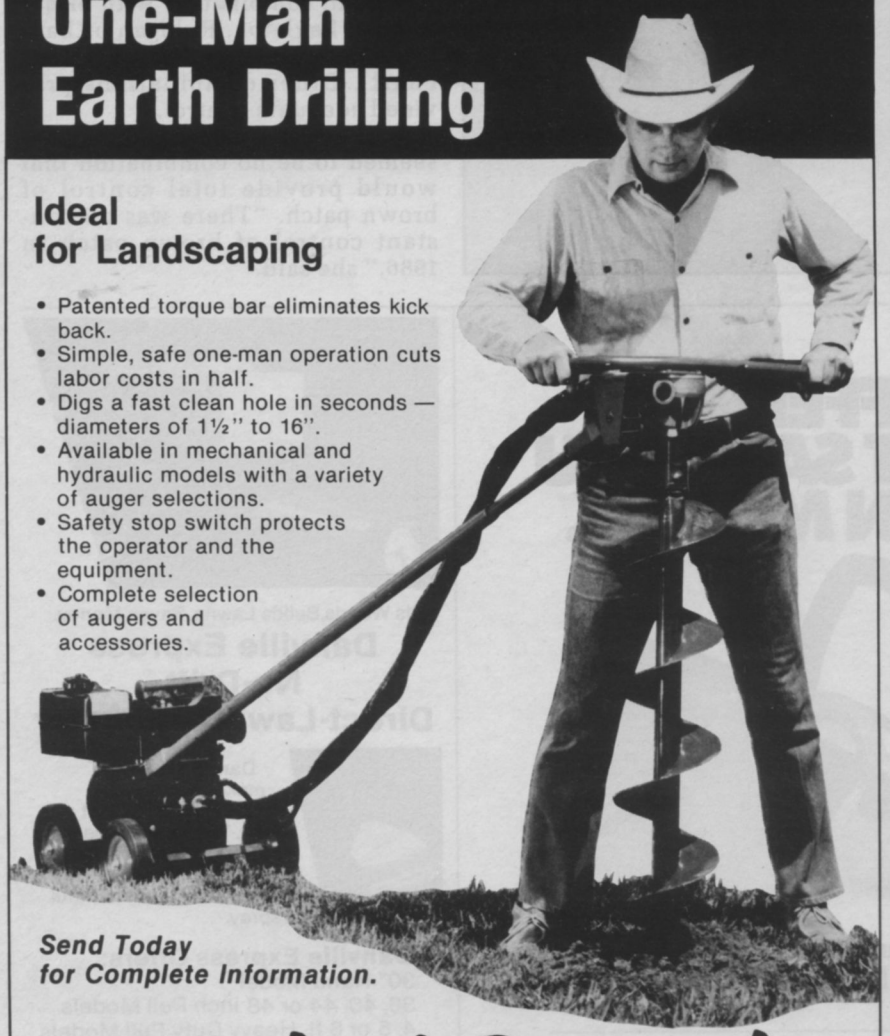

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INDUSTRY

Deere thrusts 12 products on market

With a campaign that started two months ago, John Deere has energetically entered the professional turf market, introducing 12 new products designed specifically for the market.

"We want our sales force to have a good package of products so they can develop a relationship with the golf course superintendent," says Gary Gottschalk, Deere's manager of golf and turf products. "The 12 categories we have will be enhanced. We'll introduce another dozen this year yet; we hope to have 45 to 50 new products for the turf market by five years from now."

The products introduced at the beginning of the year are a walk-behind greens mower, four hydraulic reel mowers, a utility vehicle, a boom mower and five aerifiers.

"Because we have such a wide range of equipment, we're able to get into manufacturing specialty equipment for the golf and turf market," Gottschalk says. "It's a natural extension of the technology and components already in our system."

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COVER STORY

In this 1953 National Geographic photo, Fred Grau (left) pulls on a piece of sod, a combination of Meyer zoysia and Merion bluegrass, with Sam Mathews, who wrote the NG article. Grau's assistant Al Radko golfs in the background. The "combination" sod was called the answer to a golfer's dream.

A RARE BREED

If it weren't for turf research, golf course and landscape management wouldn't be as sophisticated as it is. Part three of WEEDS TREES & TURF's 25th anniversary series looks at developments in golf, seed and irrigation.

by Heide Aungst, associate editor

As far as speeches go, it had no impact on history. It didn't begin with King's eternal words "I had a dream..." Nor did it contain a particularly memorable phrase like Kennedy's "Ask not what you can do for your country..." Or revolve around an unforgettable character such as Nixon's dog Checkers.

But a speech that noted turfgrass authority Dr. Fred Grau made in 1965 did reflect on the industry in its infancy and forecast changes which have since come about.

It began: "*The past is prologue. That is to say, everything we have done so far is only a beginning. There is no merit in reviewing the past unless, in so doing, we shape our course for the future. It is with this in mind that we dip back into significant chapters of turfgrass development and then leap ahead into the unknown, guided by the light of our burning mistakes...*"

In that speech more than two decades ago, Grau predicted:

● "Labor will be half of the budget instead of ⅔ to ¾ it is now." (The average rate is just approaching half).

As golf courses moved inland away from humid seashores, improved turf varieties and irrigation systems helped maintain the manicured look.

● Putting green mowers, if we are still using grass, will cut four feet at a swipe and a man will guide it electronically. (WT&T just reported on the first artificial greens in use; greens mowers can cut that wide; and Kubota just come out with an electronically guided mower.)

● Plant nutrients on fertilizer bags will be expressed in elemental form. (There's a recent movement among researchers to recommend this.)

● The grasses of the future will be disease-free versions of the best we have today. They will be bred for extreme resistance to drought, pests and wear.

● Sprinkler systems will be completely automated and designed to supply water as needed in *minimal* quantities.

● The superintendent or turfgrass manager will be a part of management on par with the pro and the club manager.

The last three predictions say it all. Although researchers continue to

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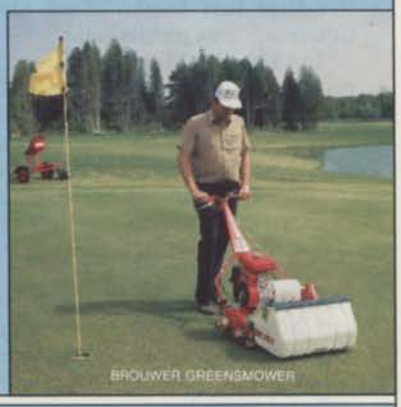
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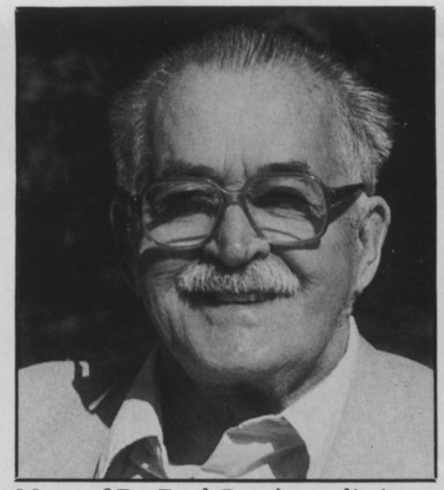
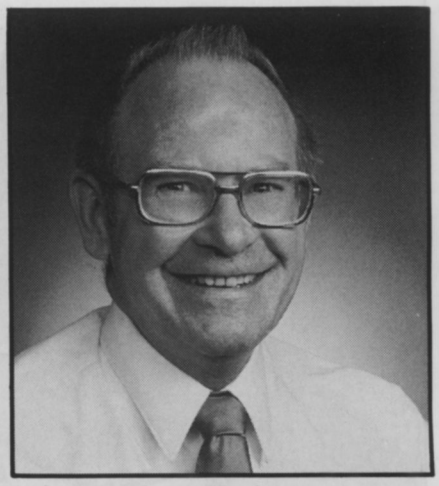


Many of Dr. Fred Grau's predictions of 20 years ago have come true in the turf industry.

Bill Bengeyfield of the USGA Green Section says TV has helped make golfers aware of good turf.



Bob Gray of Rain Bird Irrigation says computerization of systems allows for better water management.

breed for the "perfect" turf, irrigations systems are not only fully automated, but computerized, and the golf course superintendent is a full-fledged professional.

Teeing off

The game of golf originated in Scotland and came to America before 1900. According to records, a golfer named Dr. W.S. Haban requested assistance from the United States Department of Agriculture in 1906. There he met Dr. Charles V. Piper and Dr. Russell A. Oakley, scientists with a knowledge of turfgrass.

The two wanted to start experimenting, but funding wasn't available. In 1915, the executive committee of the USGA called on the Secretary of Agriculture for help in solving problems of greenkeeping.

They discovered that half the money spent on golf courses was wasted. In 1916, they began turf experiments in Arlington, Va. In 1917, the first turf book, "Turf for Golf Courses," was published.

In 1920, E.J. Marshall, Green Committee Chairman at Inverness Club in Toledo, Ohio decided to form the Green Section of the USGA in cooperatioon with the USDA. Piper served as chairman, Oakley as his associate.

From that time on, research continued at Arlington and then moved to Beltsville, Md.

One of the next historic dates in turf history is 1947, when Grau got turfgrass recognized by the American Society of Agronomy as a major agricultural industry.

In the '60s, the USGA developed the first putting green specifications. "That was a major contribution to golf," says the USGA's Bill Bengeyfield. "And they're still solid today."

About the same time, the increased use of the Stimpmeter, used to measure green speed, influenced cultural practices on the golf course. The Stimpmeter was actually invented in the '30s by Edward Stimpson, but wasn't commonly used until the late '60s.

The introduction of television also influenced golf. "TV has helped make the amateur golfer aware of good turfgrass conditions on a golf course," Bengeyfield says. "Since the '60s, the quality, talent and education of the golf course superintendent has greatly improved."

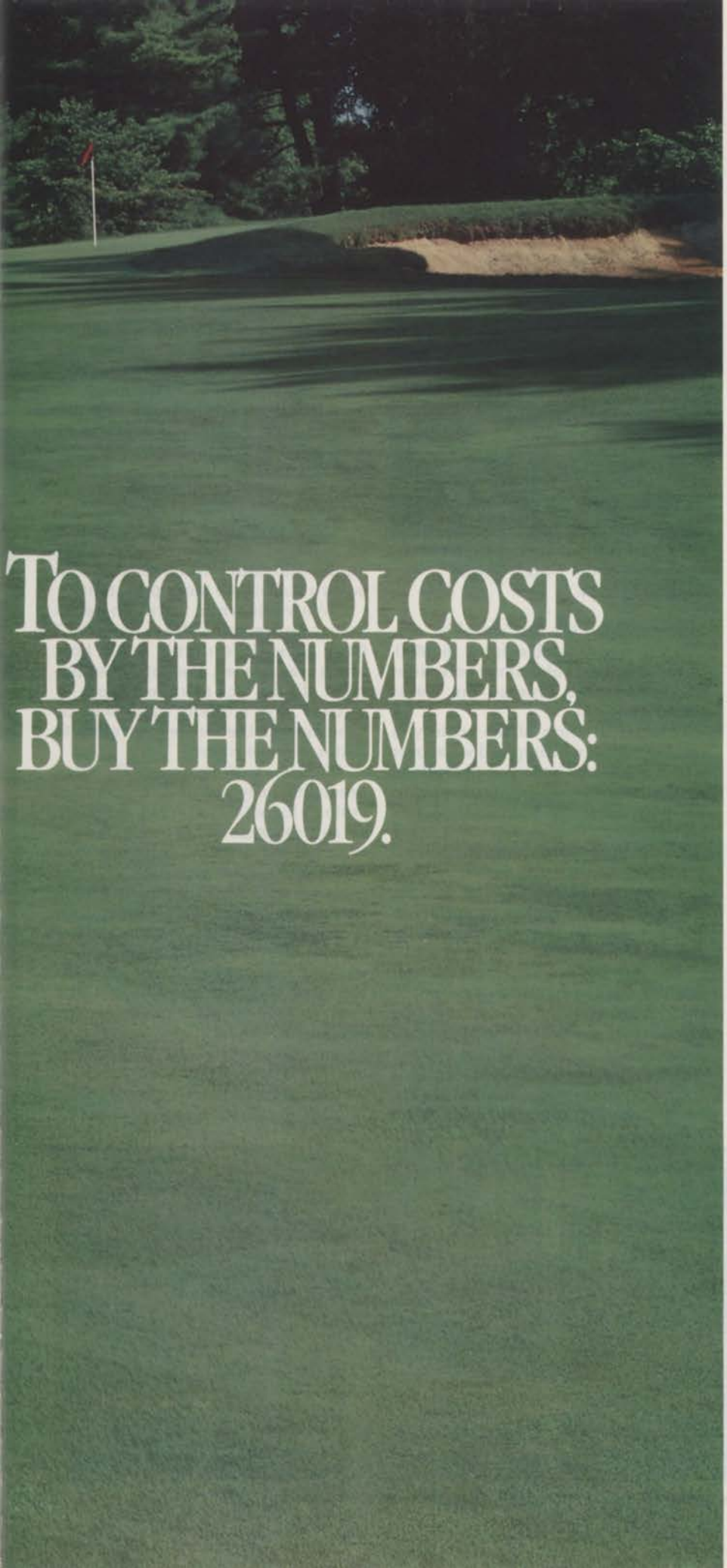
More than Merion

Superintendents needed to be more sophisticated to deal with the changes in the industry, especially improved varieties. In 1950, the Green Section, in cooperation with the the USDA, released Merion bluegrass, the first improved turfgrass variety. Meyer zoysia hit the market the following year.

"Merion was a superb development compared to common bluegrass," says Dr. Reed Funk of Rutgers University. "It was widely used by '62 and became the foundation for the sod industry." Funk was the first scientist to successfully hybridize Kentucky bluegrass. His research led to the release of varieties like Adelphi, Bonnieblue, Brunswick, Touchdown and Ram I.

Dr. Joe Duich of Penn State University cites the 1970 Plant Variety Protection Act as revolutionizing the seed industry. That act provided that the seed company could control production of its improved varieties released after 1970. Universities received financial support for research and larger seed companies started their own research departments.

Along with the development of improved turf varieties, seed production has become more economical. This 1915 photo shows the Northrup King sales staff.



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Funk says one of the biggest changes in the seed industry through the years has been the economics of producing quality seed. But as far as varieties go, Funk says the dramatic change in the past 25 years has been the improvement in ryegrass varieties.

"In '62 we didn't have any improved ryegrasses," Funk says. In '67, Manhattan ryegrass hit the market, followed shortly by Pennfine and Citation. Today, Funk and others are doing extensive research on endophytes (an insect-resistant fungus) in ryegrass.

The seed development of the decade has been the improved varieties of turf-type tall fescue. "Nurseries and breeding programs have an extreme interest in tall fescue," Funk says. "It's a fascinating story unfolding."

Some seed researchers are delving into more experimental areas such as tissue cultures. But despite the inroads made in the last quarter-century, Funk says he doesn't see one particular variety being the key to the future.

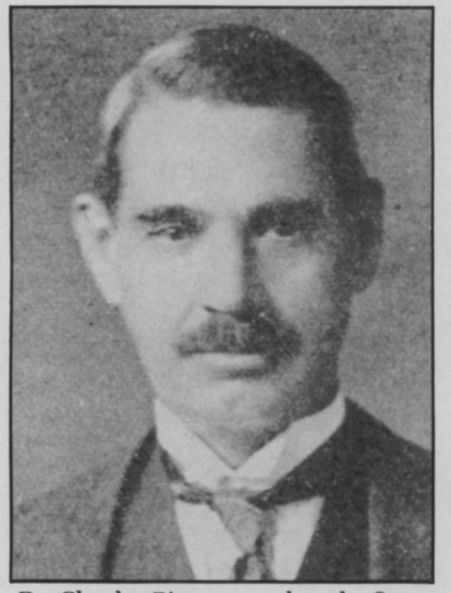
"There isn't any one species of turf for the future," he says. "Each year we get a better understanding of plant pathology, agronomy and soils. We should be able to keep up with the advances in science and utilize them."

Irrigation sophistication

Technological advances have led not only to improved turf varieties, but advanced irrigation systems as well. Water management is the subject of the future.

But to get to the future, one must also review the past. Irrigation can be traced to the ancient Greeks, Romans and Egyptians who built aqueducts for transporting water to areas of need.

According to Robert Gray, who has been with Rain Bird Manufacturing Co. for 37 years, a farmer named Skinner developed the first sprinkler system for his vegetable farm in 1890. Skinner drilled holes along both sides of a galvanized pipe so the water could spray out.



Dr. Charles Piper served as the first chairman of the USGA Green Section in 1921.

Around the turn of the century, a turning ratchet which spread water over a 50 ft. wide area improved the system. By the 1920s, the systems included spinner-type sprinklers, hose end sprayers and quick coupling valves.

In the early '30s Skinner introduced the first cam-driven rotor pop-up, Thompson marketed the first gear rotor, Rain Bird invented its sprinkler, and the first fairway system was installed.

Dr. Jim Watson of Toro says golf courses needed irrigation systems as they moved inland away from the humid seashores where the game originated.

The first fully automatic golf course system was installed in the early '50s. "Automation had taken over by the mid-'60s," Gray says.

Toro Irrigation bought out Moist-O-Matic in 1962 and entered the market previously dominated by Thompson, Buckner and Rain Bird.

Although late on the scene, Toro hit the market with its own innovations. In the '60s Toro replaced the brass and metal heads with plastic heads. Several years later, it developed the central and satellite concept in controllers.

"In February '86 we introduced the first truly totally automated system, the Network 8000," says David Morris, vice-president and general manager of Toro Irrigation. The Network 8000 calculates how much water should be used based on evapotranspiration readings and soil conditions.

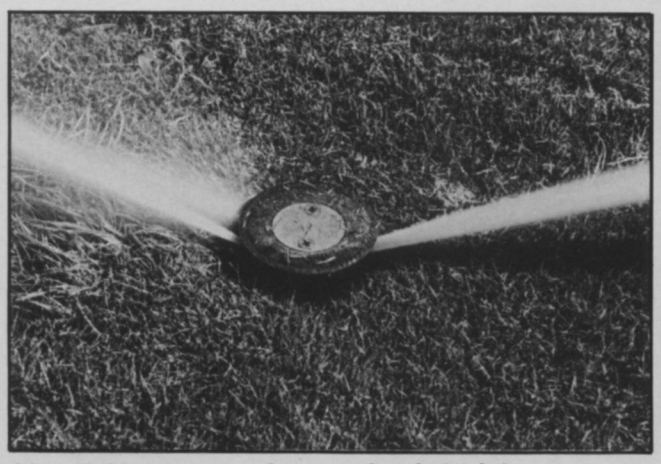
"One reason for the promotion of computerized systems is the accurate control," says Gray. When irrigation on golf courses became popular, poa annua and other water-related diseases also became more prevalent.

"We've learned through technology how much water is required," Gray says. "We didn't know how much was needed. It's not the equipment, it's the lack of knowledge."

Gray says effluent water will be used more in the future in an effort to better manage water.

More than 20 years ago Dr. Grau predicted fully automated irrigation systems for better water management. Of course, some of his predictions in that speech didn't come true, like mowing equipment which vibrates grass off with high frequency sound, sealing the blades against organisms.

But he ended his speech on a memorable note: *"I challenge each of you to let your imagination soar—jot down the ideal situation as you see it and then, in your imagination, design the equipment, the fertilizer, the grasses, to perform as you want. Who knows, one out of every thousand crackpot ideas may be the perfect answer for the future."* **WT&T**



Irrigation systems have developed from above ground-sprinklers (left) to in-ground pop-up heads (right).

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And unlike most three-way herbicides, it contains no dicamba. So there's no risk of root uptake damaging surrounding trees and ornamentals.

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TOUCHING ALL BASES

Incorporating an amusement park with a baseball complex provides plenty of maintenance curve balls under the Florida sun.

Boardwalk & Baseball will cover 135 acres of the Central Florida tourist mecca near Orlando.

by Jeff Sobul, assistant editor

I beat the drum and hold the phone,
the sun came out today.
We're born again;
there's new grass on the field.
Roundin' third and headin' for home,
it's a brown-eyed handsome man.
Anyone can understand the way I feel.
Put me in coach,
I'm ready to play, today.

—*John Fogerty*
"Centerfield"

Fogerty's lyrics demonstrate the popularity of baseball. And the dozens of amusements parks across the country are prolific moneymakers. But combining them into one park?

At first glance, the concept seems an odd one: molding the traditional elements of an amusement park—rides, an arcade, shows, etc.—with six major league-size baseball diamonds, including a 5,500 to 7,000 seat stadium.

Considering it again, though, the concept is really rather innovative.

Boardwalk & Baseball brings these two American traditions together into one theme park.

Formerly Circus World, the park is located in the Orlando area, America's amusement park mecca. The park's theme, this molding of traditions, and the park's unique landscaping promise to bring visitors back.

Beating the heat

Part of the problem with Circus World, according to Boardwalk & Baseball horticulture manager Paul Shaw, was that the park offered no protection from the often intense heat of the Florida sun. Not only were there few trees, but the park floor was almost entirely asphalt, subjecting park visitors to a "skillet effect." By day's end, guests were literally fried.

Steps are being taken to alleviate this problem.

More than a mile of the asphalt paths will be covered with an authentic boardwalk of jarrahwood, a native of western Australia, layed down on aluminum frames. The sturdy reddish-brown wood (it has a lifespan of 50 years), which turns gray after a short time, is naturally resistant to the elements, fungus and pests, and needs no chemical treatment or varnish.

Topping off the park's heat resistance efforts are, of course, trees. Shaw (who has worked at the park five years) and his staff must maintain more than 2,500 trees. "Any oak tree, any palm tree, any type of tree on the premises, was planted here," Shaw says.

In preparation for the plantings, tons of asphalt from the old park were replaced with soil. Shaw's crews also had trouble moving larger trees through the park, and then had to contend with the summer heat when trying to maintain them. As a result, the

park will have two wells to help meet its high water needs.

Patrons of the park, however, should be appreciative. In all, the trees should provide about 70 percent more shade than previously existed.

Colorful carpet

Thousands of flowers will surround the trees and line the boardwalk.

The nursery crew, part of the horticulture staff, plans on three plantings a year, using about 200,000 annuals in 30 varieties. "I don't like to get monotonous. I don't like a lot of one thing. I like a large variety of textures, colors, sizes and shapes," Shaw says.

Many of the flowers are being kept in a greenhouse on-site and will be the last material planted. In addition to flower gardens, the park will have cactus gardens, blue vase juniper hedges and shrubs. "There will be color everywhere," Shaw comments. Warren's TerraCover, a polyester geotextile, will be layed between the sides of the boardwalk and flower beds to prevent sand from eroding into the boardwalk.

In a section of the park called the Oasis, foliage will be used as a noise insulator, isolating an area with a pond and fountains that can accommodate about 300 visitors at a time. Trees will line the area to keep park noise out, and classical music will be piped in. The area will be quiet, colorful and fragrant.

'Royal' treatment

When visitors have ridden the rides but still want more excitement, the baseball fields are located just past a bridge over the roller coaster.

Fogerty's line, "there's new grass on the field," is certainly accurate for the diamonds. Sod for the two fields that will be ready for the spring opening was being layed down in January and February. (A third field may also be ready for the opening.) The remaining fields, those in the cloverleaf, will be completed by the spring of 1988, just in time for the Kansas City Royals to begin spring training.

As a result, says director of baseball Floyd Perry, the fields must be in immaculate shape. With the Royals has come the assistance of George Toma, the team's field director and a 40-year green industry veteran.

Toma taught Mike Hurd, Boardwalk & Baseball's full-time field supervisor, as much as he could during Hurd's five-day visit to Kansas City last year. Toma has advised the architects and says the park will have an "excellent facility."

Horticulture manager Paul Shaw advises two of his nursery staffers in one of two greenhouses on site.

Toma stresses the importance of the practice fields ("More time is spent playing on those. Many people forget that.") and the infield dirt. "In baseball, a lot of people think the grass is the most important part of the infield," he comments. "It's not the grass. It's the dirt. You have four guys playing on it."

This emphasis is expressed in a meticulous field management program that pays particular attention to the condition of the infield. It will be dragged and smoothed a number of times before and after games and practices.

> *'I like a large variety of textures, colors, sizes and shapes'*
>
> *—Paul Shaw*

Toma's philosophy consists of three points: "First, give the best possible field for the players to perform on. Second, create a field of beauty for the fans and television. And, third, do it without taking money out of the owner's pocket." It is possible, he adds.

Hurd and his seven-man crew have worked long weeks to meet these criteria and prepare the fields, which will host a number of events in 1987. The outfield and infield will be Tifway 419 bermudagrass, with bahiagrass covering the out-of-play areas.

Perry notes, "the 40-foot deep sand base that we have will be topped with a Florida peat, mixed specifically for moisture retention" by the contractor, Central Florida Turf in Avon Park. "(They) say this is the best mixture for the soil we have."

To further meet major league baseball's high level of quality, warning tracks on the stadium and Royals' practice field (the 1,500 seater) will be made of an expensive New Jersey aggregate used in many major league parks.

Perry envisions the park becoming the hub of amateur baseball in the region. Already for 1987, Perry has commitments to host a game with the South Florida Major League All-Stars, as well as a spring senior showcase for area high school stars. The minor league Royals will be in town over July 4th weekend to introduce the area to the team.

The Royals will play 16 games in the larger stadium (field two will also seat about 1,500 people in bleachers) during a 1½-month spring training period in March and April. When they leave, around April 15, a Class A team will begin an 80-home game schedule. "In 1988, starting March 1st, we already have 96 dates plugged in. We have to fill in between these slots.

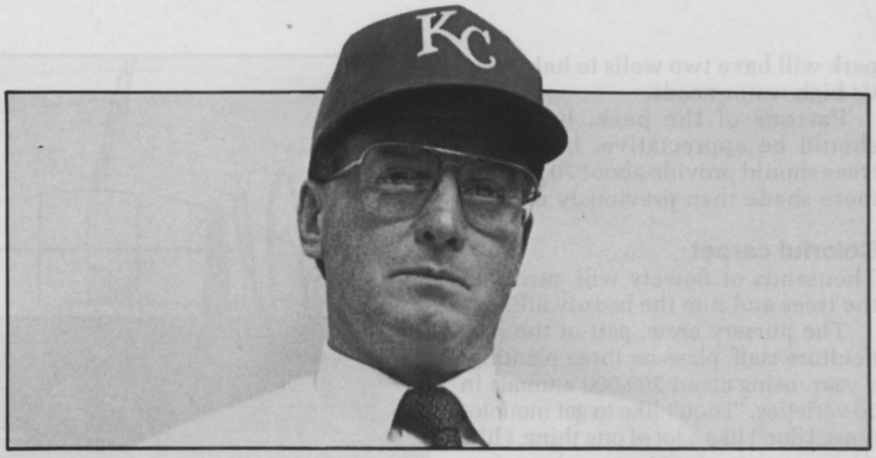
"We've had proposals on the table for old timers games; we've had proposals on the table for fantasy camps; we've had proposals for youth tournaments of 16- and 17-year olds," he adds. "So we've had proposals. It's

now up to us to see which ones are best for our park. There's enough baseball here."

Baseball fans will be able to attend games without entering the park, and park visitors can attend games at no extra charge, except for the Royals' home games, which will have a small surcharge. In addition to the six fields, batting cages are being erected for both guests and the teams.

And when the sun comes out on Boardwalk & Baseball this spring, everyone will be ready to play. **WT&T**

Park diagram and logo copyright 1987 by Boardwalk & Baseball, Inc.



As director of baseball, Floyd Perry has the task of scheduling events around the major and minor league Royals.

A NATURAL UMBRELLA

Boardwalk & Baseball will have enough trees to keep visitors cool

The project was a monumental one: transporting nearly 2,000 trees to Boardwalk & Baseball, storing them before planting, and then keeping them alive under the blazing Florida summer sun.

For horticulture manager Paul Shaw and his crew, it has been a series of challenges. Preparing for the plantings was a task in itself. "What they did when they built (Circus World)," Shaw jokes, "was fill the surface completely with lime rock and then they cut out where they wanted plantings.

"We've had such a lime rock problem, we actually mined it all out and put in good soil," Shaw explains. Along with that, the staff has had to contend with the aluminum frames layed down for the boardwalk, which have made it difficult to get the larger trees into the park. "We can't go on the boardwalk. It won't support the weight. So we have to try to find alternate routes."

The trees are transported through the park by means of a special padded forklift which keeps the bark from being stripped off.

continued on page 44

The padded forklift safely places one of the 2,000 trees into its new, seven-foot-wide home. ***(Photo courtesy of Boardwalk & Baseball.)***

What inconsistent sizing adds to your turf program may be more than you bargained for.

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How Super Trimec® Can Help You Increase Your Profits in 1987:

TURF HERBICIDE

"With this new generation herbicide, you can start earlier in the year; eliminate call-backs; handle more customers; reduce your herbicide cost; and make salesmen out of your customers. Let's visit a little bit about this opportunity."

Everett Mealman, *President*
PBI/Gordon Corporation

Super Trimec was developed for the lawn care operator who has the expertise to handle professional products, and is willing to utilize this talent to increase his profit . . . today . . . and tomorrow.

That's you, isn't it? All right then, here is what Super Trimec can do for you:

Super Trimec enables you to start earlier in the season: Of all the formulations we have developed, nothing equals Super Trimec in terms of rapid and thorough penetration. Most of the active ingredient gets into the weed within 30 minutes after contact.

Thus, weather is no longer such a problem to you. A sudden rain is not a threat, nor is a sudden drop in temperature. Even if it freezes, Super Trimec will not be aborted because it will remain viable inside the weed, and complete its mission when the weather warms up.

Just think how much earlier in the season you can start your program when you use Super Trimec!

Super Trimec helps you eliminate call-backs: Because the activity of Super Trimec is so effective, it produces visible response virtually overnight. Your customers can *see* that it is working, so they don't call up and complain. And because the spectrum of Super Trimec is so broad, it controls those tough, exotic weeds that can create problems for other herbicides.

Super Trimec reduces your herbicide cost: It is so effective that only one gallon is required to cover four acres. But that's only part of the good news . . . most lawn care companies that are using Super Trimec tell us that they only use it as a general spray once per season and then spot treat any later emerging summer weeds.

The bottom line is that Super Trimec is the most economical herbicide on the market in terms of cost per acre of immaculate weed free turf.

Super Trimec enables you to handle more customers: You start earlier in the season; you waste less time taking care of call-backs; your customers become your salesmen. Add it all up and it's easy to see why LCOs tell us they can handle more customers when they use Super Trimec.

What LCOs Should Know About Trimec Formulations

We discovered in working with radioisotope tracer studies that formulations can make a difference in the performance of selective pre-emergent herbicides. One of our better known accomplishments to result from these studies was the development of our original Classic Trimec.

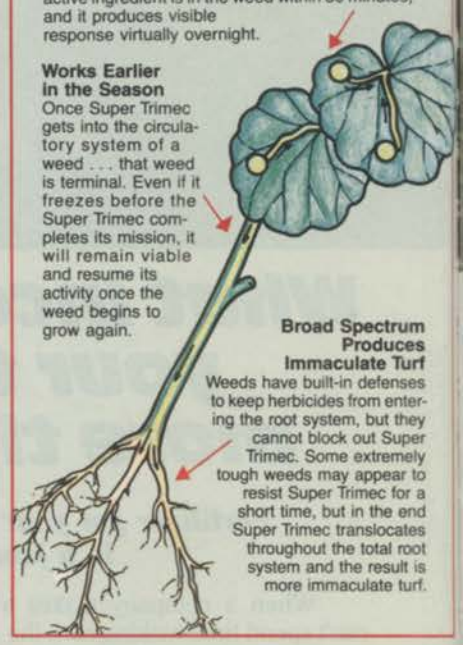
In working with formulations of Classic Trimec we discovered a procedure of reacting the three acids together so that we not only achieved greater synergism but also an homogenous complex in which every droplet is a mirror image of the total.

Thus, Classic Trimec is more efficient than a tank mix of the three chemicals because every droplet of Trimec that hits the target is uniformly loaded and contains the correct chemical ingredients in the proper ratio to trigger a maximum synergistic response.

Schematic drawing shows why Super Trimec is best herbicide for the LCO.

Fast, Visible Response Eliminates Call-backs
Super Trimec has unparalleled power to rapidly penetrate even the toughest weed. Most of the active ingredient is in the weed within 30 minutes, and it produces visible response virtually overnight.

Works Earlier in the Season
Once Super Trimec gets into the circulatory system of a weed . . . that weed is terminal. Even if it freezes before the Super Trimec completes its mission, it will remain viable and resume its activity once the weed begins to grow again.



Broad Spectrum Produces Immaculate Turf
Weeds have built-in defenses to keep herbicides from entering the root system, but they cannot block out Super Trimec. Some extremely tough weeds may appear to resist Super Trimec for a short time, but in the end Super Trimec translocates throughout the total root system and the result is more immaculate turf.

YOUR GUARANTEE OF A TRIMEC COMPLEX PROFESSIONAL QUALITY

SUPER

"Suburban Lawn and Garden Inc., is one of the most successful and respected full service landscapers anywhere in the country. They have been using Classic Trimec for a number of years in their lawn maintenance division, but have always made it a policy to continually test new products. You can imagine how gratifying it is to hear Don Tannahill, Manager of Suburban Liquid Lawn Services, say that side-by-side tests of all post-emergent herbicides clearly show that Super Trimec is by far the most efficient, and that they are going to use it exclusively for their first round of treatments in 1987.

Everett Mealman

In further experiments, we discovered the secret of how to combine certain esters with dicamba. No one else has ever been able to do this and, of course, this secret process is the basic building block of Super Trimec.

Not only does Super Trimec have unparalleled power to rapidly penetrate even the toughest cuticle and translocate to the root system, but it is also friendly to the environment ***because the dicamba is in acid form*** and does not migrate in the soil moisture and thus endanger off-target ornamentals.

Our Challenge to You in 1987:

In many ways 1987 is shaping up as a year of tremendous opportunity for the alert LCO. Virtually all economists are predicting a higher percentage of employment and more spendable income. Homeowners are going to want lawn care service, and they are going to be able to afford it. And yet there is every indication that your expenses can actually be lower than they were last year.

You'll never have a more favorable climate to make the switch to Super Trimec.

Yes, it's going to cost you more per gallon than Classic Trimec, or (heaven forbid) some three-way tank mix — but your initial outlay for Super Trimec will come back to you many times over, before the end of the season; your total annual herbicide expense will be less; you'll be able to start earlier in the season; you'll do better work; and you'll make more money!

We challenge you to make the move to Super Trimec!

Yes, Super Trimec is a low volatile ester. Yes, Super Trimec is labeled for professional use only — but you *are* a professional. Utilize your professionalism to increase your profits.

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In some local areas we are seeing an interest in a herbicide that does not contain 2,4-D. If you're in such a boat, we can help you with a D-FREE Trimec.

To all intents and purposes, the weed control of our D-FREE Trimec is very much like our Classic Trimec. It costs a little more because of ingredients, but it does have the same synergistic activity and homogeneity that makes all Trimec formulations so effective. If you have any questions about any of our Trimec formulations call, Toll-free: 1-800-821-7925. In Missouri: 1-800-892-7281.

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TURF HERBICIDE

683-187

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A new home

"When we prepare an area for a tree, we dig the hole 1½ times larger than the original (root) ball, and we incorporate Milorganite so there is no danger of burning the tender roots when they come out," Shaw explains.

"When we backfill the holes we use a process called jetting in," Shaw says.

The process involves taking a six-foot-long rod with a water hose on the end and probing around the tree, injecting water to help remove damaging air pockets. "It works well down here because the sand collapses so well into the air pockets with water added to them."

He has three staffers who do nothing but water and jet-in trees behind the planters.

"Approximately two weeks after they're planted, we come back and build a bowl around the root ball out of soil and drench the root ball with Vaughan's Master Blend liquid fertilizer and Chipco 26019. And that usually makes the trees just snap, really go fast."

40 days and 40 nights

Due to the park's planned spring opening, many of the trees had to be planted during the middle of summer, not an ideal time.

To avoid desiccation and give the trees a chance to take root, they required almost constant watering from an irrigation system that was designed in-house.

"Anything to do with horticulture, we do in house," Shaw says. "It never fails that if we contract something out we have to go back later and correct it. We learned a long time ago it's better to do it yourself."

Water risers (hoses) are hooked to the top of the trees, providing a constant spray to the leaves. The risers remain in place for two months. More than three miles of flexible tubing has been used so far.

"If it wasn't for that system, this would just revert back to a scrub area," Shaw comments. "That's how much we depend on irrigation.

"The only thing we've had problems with as far as survival rates are our pine trees. Pines you just don't move in the summer. We spray them with a preservative (Vapor Guard), a coating solution to stop transpiration, but when you plant pines in July, they just don't have a good mortality rate. Out of 1,500 pines we've lost close to 100."

In all, they have lost only 103 trees of the 2,000 planted. The park eventually will have nearly 3,000 trees.

—Jeff Sobul

GOING THE DISTANCE FOR THE ROYALS

Maintaining one baseball field at a high level of quality was never considered easy. But six?

This is the task Boardwalk & Baseball horticulture manager Paul Shaw and field supervisor Mike Hurd find in front of them.

"Two of the fields-the major league practice field with 1,500 bleacher seats and one of the cloverleaf fields-will be ready when the park opens April 4th, about the same time the major leaque baseball season opens. The 5,500-7,000 seat stadium will be ready for use in February, 1988.

The remainder will be ready for the spring of 1988, when the park begins at least a 10-year stint hosting the Kansas City Royals spring training, and the Royals' Class A minor league affiliate.

Turfgrass maintenance

Outfields and infields for all six fields will be Tifway 419 bermudagrass, except for the stadium infield, which will be artificial turf, the Royals' normal playing surface. Infields on the four practice fields in the cloverleaf will be cut at ⅝ inches, outfields at ¾ inches. The stadium outfield will be cut at ⅝ inches.

"We will not have a set schedule for mowing because frequency of mowing must be related to the rate of growth rather than to a time schedule," Shaw says. "Each time a field is mowed, it will be mowed in a different direction than the time before to prevent the 'washboard' effect." Grass clippings will be removed each time the field is mowed, Shaw adds.

For spectator appeal, the stadium's outfield will be mowed so that it will create a diamond pattern, a common practice on many major league fields that have games televised.

Shaw hopes to maintain a 14-inch perculation rate by eliminating thatch build-up. Hurd will topdress with masonry sand, verticuting three to five times a year and aerifying three times a year.

He and Hurd will try to limit herbicide use through proper cultural practices. "Even selective herbicide reduces the hardiness of plant material," Shaw comments. "We avoid its use as much as possible. We find that proper fertilization, irrigation and maintenance will prevent most weeds.

"We will use herbicides routinely on bermuda for the first year. Thereafter we will reduce herbicide use as much as possible and rely on cultural practices." Ronstar will be used for pre-emergence control after the sod is established, with back up as needed from pronamide arsenates and asulam.

A regular weed control program won't be used on the bahiagrass in areas outside the field of play. "We treat spot problems," Shaw says. Roundup will be used for edging, Trimec for areas with dollar weed during spring and fall.

The fields will have a two-month schedule rotating Daconil, Chipco 26019 and terrachlor.

Pesky mole crickets

"We have three swarms of mole crickets per year in our area. Oftanol-laden fertilizer will be applied in early May, July and September," Shaw says.

He adds that treatment for other pests will be done as needed. Visual inspections will be performed daily on baseball fields for pests and diseases.

All the chemicals will be stored on sight in the park's EPA-approved storage facility. In addition, the park has its own soil analysis lab, and will do all horticulture-related work on-site.

—Jeff Sobul

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CONTROLLING INSECTS

Despite the recent controversy, chemical companies are experimenting with new pesticides. But registration may be a long way off.

by Dr. Harry D. Niemczyk, OARDC; and Dr. Patricia Cobb, Auburn University

Controlling damage caused by insects is necessary to achieve the quality green settings most Americans have come to expect for their homes, businesses, recreation areas, sports events, government buildings and cemeteries.

Insecticides still remain the primary means for controlling such damage. However, increased environmental concerns by the U.S. Environmental Protection Agency and the public's perception of pesticides as shaped by recent media coverage of their use on home lawns and golf courses, has heated the "pesticide controversy."

Views range from those who want them completely eliminated to those who are confident they can be used safely, especially by professionals trained to do so.

The black turfgrass ataenius develops in four stages, as is shown here.

Registrations in 1987?

In this atmosphere new insecticides such as Ciba-Geigy's CGA-12223 (Triumph) still has not received registration despite being researched for 10 or more years. An Experimental Use Permit may be approved in 1987.

Stauffer Chemical has indicated an interest in registering the organophosphate, fonofos (Dyfonate), for use on select turfgrass insect pests. Research data from 1986 shows it to be a very effective material against grubs and other turf pests.

Two synthetic pyrethroids, one from Mobay and the other from FMC, look good for control of chewing insects such as cutworms and sod webworms. Progress toward registration is expected in 1987.

IGRs

Insect Growth Regulators (IGRs) are compounds which impede the growth and development of insects. Treated adults may lay infertile eggs and immatures stop further development eventually, leading to death.

Ohio tests on one IGR from Mobay and another from Union Carbide look promising for control of pests such as chinch bugs.

Nematodes for grubs

Tests conducted on two species of parasitic nematodes from the Biosis Co. of California have shown promise for control of grubs such as the masked chafer and Japanese beetle. Applied as a single spray in April, one of the species significantly reduced overwintered grubs and remained effective to give control of the succeeding generation in August. This appears to be a new and very promising form of biological control for grubs.

Life cycle is key

Knowing the life cycle of pests is at least as important as selecting an insecticide for their control. This guide points out the seasonal occurrence of some important cool- and warm-season pests to be alert for in 1987, when their vulnerable stages occur, and some suggested insecticides that may be used to control them. No endorsement of products is intended, nor is criticism implied for those not mentioned.

COOL SEASON

Late Winter (March)

Chinch bugs and billbugs—In northern zones chinch bugs and billbugs both overwinter as adults in thatch or sheltered sites near buildings. They can become active during warm days in March. Infestations of hairy chinch bug and bluegrass billbug also occur in zoysia, Kentucky bluegrass and fine fescues. Retreatment for chinch bugs in middle to late summer may be necessary if reinfestation from adjacent

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untreated areas occurs.

Grubs—The larvae of this group of pests normally overwinter six inches or deeper in the soil. If spring comes early, grub activity can be expected along with skunks and raccoons who will tear up the turf searching for the grubs. Moles, who feed on grubs and earthworms, also become active at this time.

Treatment at this time kills overwintering chinch bugs and billbugs and reduces infestations of these insects during the summer.

Black turfgrass ataenius—This golf course pest overwinters as an adult in the soil under debris in roughs or other protected areas. A few may be seen flying about on warm afternoons in early March. Usually this activity begins when crocus starts blooming and intensifies as the bloom of red bud appears.

Greenbug—The only stage of the greenbug known to overwinter in northern states is the egg. Shiny black eggs deposited the previous fall may be found adhering to grass blades, fallen tree leaves or other debris.

Sod webworms—The most common sod webworm species overwinter as larvae in the thatch or upper inch of soil. Feeding does not resume until hibernation (dipause) is broken by early spring warmth.

Spring (April - May)

Chinch bugs and billbugs

As warm days of spring approach, movement of chinch bug and billbug adults increases rapidly. Generally, egg laying begins the first week of May. Occasionally adult billbugs can be seen on sidewalks on warm afternoons.

Generally, application of insecticides to prevent infestations of chinch bugs and billbugs should be completed by the first week in May in cool-season areas. Such applications are made before significant numbers of eggs are laid. This time may vary as much as a week or more depending upon the spring weather.

Grubs—Overwintered grubs return to the surface and begin feeding on turfgrass roots in April. Increased activity and damage from birds, moles, skunks and raccoons foraging on grubs can also be expected. Feeding by birds, mammals and grubs continues through May.

Treatment should be delayed until grubs are in the top one-inch of soil. Irrigation or rainfall should follow such applications to aid in moving the insecticides to the target grub as soon as possible.

Although milky disease products for control of Japanese beetle grubs may be applied anytime there is no frost in the soil, spring is a good time for such applications. The soil is open and frequent rains move the disease spores into the soil and thatch. It should be noted that only the Japanese beetle grub will be affected by milky spore products.

Incidents of large grub infestations (larvae of June bugs) have been increasing in cool-season areas over the past three years. Locations of such infestations should be identified because reinfestation is likely every three years.

Eggs are laid in May and June, therefore treatment should be made in late summer, early fall of that year or the next spring while the larvae are small. Later applications against full-grown larvae have given inadequate control.

Black turfgrass ataenius—Adults of the black turfgrass ataenius can be seen "at wing" in April and are often found in clipping catchers after early mowing of golf course greens. These adults begin laying eggs in early May, or about the time Vanhoutte spirea first comes into bloom. Check with local extension entomologists for precise time if needed.

A word of caution: diazinon applications may be toxic to waterfowl such as geese feeding on the treated turf.

Sod webworms—Overwintered larvae of the sod webworm begin feeding as soon as the grass begins to grow. Usually damage is insignificant, but areas that do not green up may be infested. These areas frequently have probe holes from starlings feeding on the larvae.

Moth flights begin in May in northern areas.

Young larvae are usually present about two weeks after the spring moth flight peaks, so treatment of young larvae can be done in May in some areas.

Cutworms—Moths of cutworms begin laying eggs on golf course greens and other turf areas in the spring. These eggs hatch producing larvae that feed on grass blades during the night. The black cutworm is the most common species on cool-season turf.

While visible damage is uncommon on home lawns, damage can be significant on golf course greens in late May.

Greenbug—Greenbug eggs begin hatching as early as April, but significant infestations do not develop until later in the year. Aphid numbers are too low to detect.

Winter grain mite—Damage from this mite is often first noted in April when turf areas are receiving spring fertilizer applications. By late May, the mites will have laid their eggs and died. Mites do not appear again until the eggs hatch in October.

Clover mites—Incidents of visible damage to home lawns are often seen in April in several Ohio cities and Denver, Col. Usually a nuisance pest in and around homes, the clover mite occurs in large numbers (5,000 per sq. ft.) across entire lawns and on turf next to building foundations. Symptoms of injury are the same as the winter grain mite. Turf next to foundations may be killed.

The clover mite has a slightly pink body and eight pale-colored legs. The first pair of legs are extremely long and protrude well out in front of the mite. The absence of bright red legs distinguished the clover mite from the winter grain mite.

Summer (June-August)

Chinch bugs—Chinch bug eggs continue to hatch into June. Bright red nymphs appear. The number of chinch bugs increases rapidly in June and peaks in July and August when northern lawns can receive severe damage. This damage is often masked by summer dormancy of turf caused by drought. Hot, dry conditions are ideal for chinch bugs.

During August the numphs molt into adults that mate, lay eggs, thus producing a second generation. Some northern areas have only one generation per year.

Billbugs—Bluegrass billbug larvae feed in grass stems during June and move to the plant crowns and roots and rhizomes during July. This feeding causes brown spots that frequently resemble the symptoms of some fungus diseases. Symptoms are also often masked when the turf is dormant from drought. The larvae usually move deeper into the soil under dry soil conditions. During late July and August the larvae burrow deeper into the soil to pupate and transform into adults.

Grubs—By June, grubs have stopped feeding and are in the pupal stage three to four inches in the soil. Beginning in mid-June and continuing through mid-July, the adults

INSECT CONTROL GUIDE

COOL SEASON*	LATE WINTER(March)	SPRING (April-May)	SUMMER (June-Aug.)	FALL(Sept.-Oct.)
CHINCH BUGS	When summer damage is expected preventative application of liquid or granular Dursban (1 lb. AI/acre) or Oftanol (2 lb. AI/acre may be used as soon as the insects become active.	Preventative applications of insecticides should be completed by the first week in May.	Treat before injury is severe with Dursban (1 lb. AI/acre), diazinon (2.5-5.5 lb. AI/acre), Sevin (6-8 lbs. AI/acre) or other labeled insecticides.	Treat if necessary, but generally, infestation levels are not high enough to warrant using insecticides.
BILLBUGS	Same as for chinch bugs.	Same as for chinch bugs.	Treat infestations at same rates as grubs with diazinon, Turcam, Proxol or Sevin. Irrigate following application.	Treatment is not appropriate at this time.
GRUBS	Application of Oftanol (2 lb. AI/acre) during March provides control of overwintered grubs. This may not control into late summer.	A single application of Oftanol (2 lb. AI/acre) made in April should control overwintered grubs. Can also be controlled in May by spot or general treatment with Turcam (4 lb. AI/acre) or Sevin (8lb. AI/acre). Golf course superintendents can use Mocap (5 lb. AI/acre) or Sevin (6-8 lb. AI/acre) to control green June beetle. Irrigate with application.	Existing infestations found in July or Aug. should be treated with Proxol, Turcam, Oftanol, Sevin or Mocap (commercial turf only) at rates used in spring. Treat green June beetle with Sevin (6-8 lb. AI/acre).	Treatment can be made as late as mid-September. Irrigate first if thatch or soil is dry.
SOD WEBWORMS	Treatment is not appropriate at this time.	When necessary, apply diazinon (5 lb. AI/acre) or Proxol (6-8 lb. AI/acre).	Make application when larvae are present or two weeks after peak moth flight. Use Dursban (1 lb. AI/acre), diazinon (5 lbs. AI/acre), Sevin (6-8 lbs. AI/acre) or Proxol (6-8 lb. AI/acre).	Larvae are small and cause little damage at this time. Treatment in September reduces population for next spring.
GREENBUGS	Treatment is not appropriate at this time.	Aphid numbers are too low to detect.	Use Orthene (1 lb. AI/acre) or Dursban (1 lb. AI/acre) or diazinon (2.5 lb. AI/acre).	Severe infestations may occur as late as December. Use the same insecticides as in the summer.
BLACK TURFGRASS ATAENIUS	An application of Oftanol (2 lbs. AI/acre) in March may prevent summer infestations of larvae, but it's best to wait until April.	Application of Oftanol (2 lbs. AI/acre) during April or May prevents larval infestations during summer. Diazinon (5-6 lbs. AI/acre) applied to fairways in April also prevents infestations.	If preventative applications were not made, spot or generally treat with Proxol (8 lbs. AI/acre), Turcam (2-4 lbs. AI/acre), Sevin (8 lbs. AI/acre) or Mocap (5 lbs. AI/acre), as needed.	Undeveloped larvae die with frost.
CUTWORMS	Treatment is not appropriate at this time.	The insecticides effective against sod webworm are also effective against cutworms. Apply late in the afternoon. Do not irrigate for best control.	Use Dursban (1 lb. AI/acre), Proxol (8 lbs. AI/acre) or Sevin (6-8 lbs. AI/acre). Do not irrigate following liquid applications unless specified on label.	Same as for summer.
COVER MITES	Treatment is not appropriate at this time.	Liquid diazinon (2.5 lb. AI/acre) or Dursban (1 lb. AI/acre) should be used.	Treatment usually is not necessary.	Treat as needed with liquid diazinon (2.5 lbs. AI/acre) or Dursban (1 lb. AI/acre).
WINTER GRAIN MITE	If needed, use spring treatment.	If treatment is necessary, use liquid diazinon (2-3 lbs. AI/acre) or Dursban (1 lb. AI/acre). Avoid repeated use of Sevin.	Treatment is not appropriate, since mite is in egg stage.	Treatment is not appropriate since mite is in egg stage.

* See accompanying text for details; always follow label directions.

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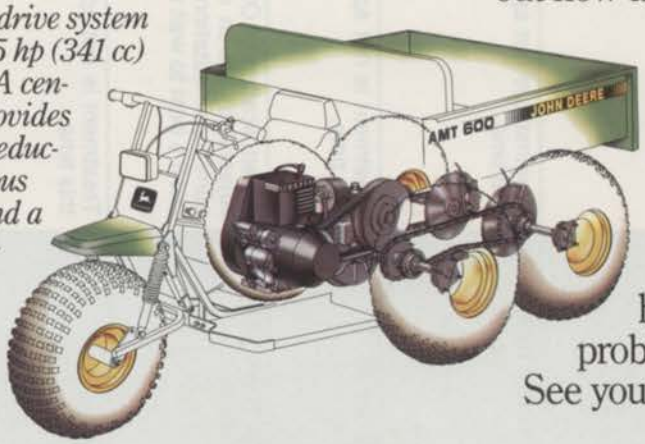

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AMT 600

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of various species emerge and burrow into the soil to lay eggs. Hatching and appearance of young larvae occur during July and August.

Extreme heat and drought during the summer may cause some grubs to move deeper in the soil. Under such conditions, irrigation several hours before treatment and a thorough soaking afterward is advisable.

Black turfgrass ataenius—Eggs laid by beetles during May hatch in June and the larvae immediately begin feeding on the turf roots and thatch.

From late June to mid-July, symptoms of injury include wilting in spite of irrigation. In July, larvae move deep into the soil, pupate and emerge as adults. These adults lay eggs during August producing a second generation in states such as Ohio. The second generation larvae are capable of damaging turf.

Sod webworms—Damage from sod webworm larvae occurs occasionally in most of the cool-season turf region. Injury is more common in midwestern states and is usually seen in July and August. Older sod fields and heavily thatched turfs are good candidates for infestation. There are generally one or two generations per year, depending upon the species.

Cutworms—Cutworm larvae continue to cause damage to golf course greens from June through August. These larvae pupate in the soil or thatch and emerge as moths that lay eggs for additional generations.

Fall armyworm—The fall armyworm is seldom a problem of cool-season turf.

Greenbug—Damaging populations of greenbug can occur from June through August. Populations and incidents of damage frequently vary from area to area even within a city.

Symptoms of injury include turf under the dripline of trees and in open areas having a burnt orange color. When symptoms are seen, numerous aphids (40 or more) may be seen on a single grass blade. Close examination of damaged turf is necessary because the aphids are small. If left untreated, a heavy infestation can kill the turf.

Chinch bugs—In the northern U.S. the second generation of chinch bug is at peak numbers in September. Nymphs complete their development to adults in late October. Most chinch bugs overwinter in the turf, but some move to protected areas before winter.

Generally, infestation levels at this time are not high enough to warrant the use of insecticides. Early fall rains and infection by a parasitic fungus *(Beauvaria spp.)* usually provide sufficient control.

Billbugs—During September billbug adults that developed from summer larvae are often seen wandering about on sidewalks, driveways or other paved surfaces. Before winter, these adults seek shelter in thatch, along sidewalk edges or near foundations and overwinter there. Many, if not most, overwinter in turf.

In some areas (Cincinnati, Ohio) a partial second generation may occur. Larvae of this generation have been known to cause visible damage in September and October.

Grubs—Most species of grubs are in the third of their three stages of development and are feeding actively. When soil temperatures decrease in late October, the larvae burrow deeper into the soil to overwinter. Severely cold winters have little effect on survival.

Black turfgrass ataenius—By September, adults of the current generation begin to fly into protected areas, such as golf course roughs, to overwinter. Larvae that have not completed development to adults before frost are killed.

Sod webworm—Northern sod webworm larvae are small and cause little if any damage in the fall. Late in the fall the larvae construct a cocoon-like shelter in which they overwinter.

Greenbug—Severe infestations of greenbug have been known to occur as late as the first week of December. Areas having a history of infestation should be re-examined when mild temperatures extend late into the fall. Heavily infested turf will not survive through winter.

WARM SEASON

Late Winter (March)

Chinch bugs and billbugs—In southern Florida, the southern chinch bug is active throughout the year. In other southern areas, chinch bugs and billbugs become active during warm days in late winter. Most varieties of St. Augustinegrass and some bermudagrass are more likely to be infested by chinch bugs. Zoysia and bermudagrasses may be attacked by the hunting billbug.

When summer damage from chinch bugs and/or billbugs is expected, treatment controls adults before eggs are laid. If spring is early, these applications may be needed as early as mid-March. During a late spring, applications may need to be delayed until the last week of March.

However, in most cases, treatment can be delayed until damage signs first appear in June. Retreatment for chinch bugs in middle to late summer may be necessary if reinfestation from adjacent untreated areas occurs.

Preventative treatments may not be successful in southern Florida where the southern chinch bug has multiple generations and is resistant to most organophosphate insecticides in some areas. Replacing susceptible turf with Floratam St. Augustinegrass, a variety resistant to the southern chinch bug, or non-host grasses, will usually provide excellent natural control in Florida. However, reports of chinch bugs feeding on Floratam continue to increase in south Florida.

Grubs—The larvae of this group of pests normally overwinter six inches or deeper in the soil. If spring comes early, grub activity can be expected along with skunks and raccoons who will tear up the turf searching for the grubs. Moles, who feed on grubs and earthworms, also become active at this time.

Mole crickets—Mole crickets have extended their range from Florida and eastern Georgia into southern Louisiana, eastern Texas and up the East Coast into the Carolinas. Timing of treatments is critical and varies from one area to another.

The tawny and southern mole crickets are the primary pest species. Except for southern Florida, both have one generation per year. Mole crickets become active in March from north central Florida throughout their range in the Gulf States after overwin-

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tering in the ground as adults or nymphs. Tunneling damage takes place at night in moist soil and increases as mole crickets become more active. Both mole cricket species begin spring mating flights in late March. In most areas, March treatment is seldom required.

In years when tunneling of overwintered mole crickets resumes earlier than normal, treatment has been used with some success. Generally, such applications are better made later in the year when young nymphs are present. Rolling, fertilizing as recommended, and irrigation help keep grass roots in contact with the soils and growing in areas where tunneling damage is observed.

Spring (April-May)

Chinch bugs and billbugs—As warm days of spring approach, movement of chinch bug and billbug adults increases rapidly. Generally, egg laying begins the first week of April on warm-season turf. Occasionally adult billbugs can be seen wandering about sidewalks on warm afternoons.

Generally, application of insecticides to prevent buildup of chinch bug and billbug populations should be completed by mid-April in the South. Such applications are made before significant numbers of eggs are laid. This time may vary as much as a week or more depending upon the spring weather. When this approach is not used and southern chinch bugs are detected in May, treatment provides control. In areas with three to five chinch bug generations, turf surrounded by infested, untreated host plants may require one or two retreatments at six week intervals.

Grubs—Overwintered grubs return to the surface and begin feeding on turfgrass roots in early April. Increased activity and damage from birds, moles, skunks, armadillos and raccoons foraging on grubs can also be expected. Feeding by birds, other animals and grubs continues through April.

Infestations of such grubs can also be controlled during early April by spot or general treatment. Treatment should be delayed until grubs are in the top one-inch of soil. Irrigation or rainfall should follow such applications. Although milky spore disease products for control of Japanese beetle grubs may be applied anytime there is no frost in the soil, spring is a good time for such applications in areas where Japanese beetle grubs are numerous. The soil is open and frequent rains move the disease spores into the soil and thatch. It should be noted that only the Japanese beetle grub will be affected by milky spore.

Mole crickets—Damage increases in April from north central Florida throughout the southern areas of the Gulf States. Mating and dispersal flights continue as egg laying and hatching begin.

Early spring treatment may be necessary in areas that were severely damaged last fall, if overwintered mole crickets are still present. Small damaged areas can be rolled or otherwise packed down so that the turf roots are reconnected with the soil. Early spring damage is due primarily to tunneling. Mole cricket feeding at this time is minimal.

To determine cricket presence, pour soapy water (2 oz. liquid dishwashing detergent in one gallon of water) on turf areas where infestation is suspected. Crickets will usually surface in three to 15 minutes (longer in cool weather).

Infested areas should be monitored weekly by soap flushes to determine the presence and abundance of newly hatched mole cricket nymphs. Nymphs usually hatch in central Florida during April and May. Farther north and west hatching begins in May and continues through June. Residual treatments and treatments with toxic baits should be made when nymphs are present.

Sod webworms—Overwintered larvae of the sod webworm begin feeding as soon as the grass begins to grow. Usually damage is insignificant, but areas that do not green up may be infested. These areas frequently have probe holes from starlings feeding on the larvae.

In warm-season areas webworm larvae pupate during late March and early April. Moth flights begin in April in southernmost areas.

Young larvae are usually present about two weeks after the spring moth flight peaks, so treatment of young larvae can be done in May in some areas.

Damage from the burrowing sod webworm may be evident in late May in the South. Rubbing a hand over turf suspected of being infested exposes larval burrows that are covered with a web flap and grass clippings.

When necessary, a wide range of insecticides may be used to achieve control.

Cutworms—Moths of cutworms begin laying eggs on golf course greens and other turf areas in the spring. These eggs hatch producing larvae that feed on grass blades during the night.

While visible damage is uncommon on home lawns, damage can be significant on golf course greens in May.

Black, granulate and variegated cutworm moths become active in March and April in the South. Larvae are present on turf, especially on golf greens and tees. Damage can become evident as early as mid-April. By May, the larvae are large enough to cause severe damage.

The principle of controlling these pests is to apply an insecticide late in the afternoon and allow night feeding cutworms to contact and feed on the treated foliage. Irrigation following liquid application is therefore not advisable unless specified on the product label.

Fire ants—Fire ants are spreading across much of the South. These ants inflict painful stings to man and animals, making them more a "people problem" than a grass problem. They begin establishing new mounds during warm, wet days of spring. During this time, ants are active near the surface of mounds and workers are actively foraging for food.

New mounds may not be visible above the turf surface at this time. Areas heavily infested with old mounds and the less-visible new mounds can be treated broadcast. Individual mound treatments can be made in less infected areas or in areas that are re-infected as the season progresses.

Read the label for specific directions for mound treatment. Do not disturb the mound before or during treatment.

Summer (June-August)

Chinch bugs and billbugs—Southern chinch bugs are not usually a problem in well-irrigated turf or during summers when rainfall is plentiful. Southern chinch bug-damage first appears during the dry periods of June and July. Damage may continue throughout the summer and into the fall because of overlapping generations.

A wide range of insecticides may be used at label rates to control existing infestations. Floratam St. Augustine, a chinch bug resistant variety, has been a primary turf variety grown in more southern coastal areas and Florida where southern chinch bug is a problem. However,

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The development of a mole cricket from nymph to adult.

reports indicate that chinch bug feeding has occurred on Floratam in some locations is south Florida.

Billbug grubs are usually large enough to be found in the soil by late June and July. Areas of turf where adult billbug activity has been observed earlier should be examined routinely. Zoysia and bermudagrasses are especially susceptible to infestation. Turf that does not hold together, does not respond to fertilization normally or appears to be drought-stressed in spite of irrigation may be infested. If drought conditions exist, water prior to treatment as well as afterwards.

Grubs—Beetle flights continue and often peak in June, although the time flights occur varies from year to year. Japanese beetle flights occur mainly from middle to late May and June. Brown May or June beetle flights often follow heavy rains in late May and June. New generation grubs of most southern species can be found by mid-August.

Infestations of new generation grubs are present in late July or August. Extreme heat and drought during the summer may cause some grubs to move deeper in the soil. Under such conditions, irrigation several hours before treatment and a thorough soaking afterward is advisable.

Mole crickets—Egg laying diminishes in late June, and newly-hatched nymphs of both species feed voraciously. Tunneling damage suddenly becomes obvious in July as the nymphs grow larger. Because of the potential for sudden damage at this time, turf areas should be inspected several times a week during this period.

Bait formulations are effective in controlling mole cricket nymphs from June through August in the area from central Florida north and west through the gulf states. Baits work best in eastern Georgia during spring and fall. Bait applications usually must be repeated one or more times.

Mole crickets are more active at night in moist soil. Turf should be irrigated several hours before baits are applied. Delay application until later in the day, and do not irrigate for two to three days thereafter.

Residual control of mole crickets may vary with location, irrigation and amount of rainfall. In some cases, Oftanol has not performed as effectively as expected, nor as consistently as it once did in these same locations. Oftanol and other residual controls work most effectively on younger mole cricket nymphs when treatments are watered immediately. Fewer residual treatments can be used as outbreaks occur, but usually have to be repeated several times.

Sod webworms—Most sod webworms complete at least three generations a year with overlapping generations toward the end of the season.

Damage is most severe from late June through August. In southern Florida where the tropical sod webworm is active throughout the year, damage is most severe in late summer and fall.

Hybrid bermudagrasses are favored by sod webworms, but damage occurs on other warm season grasses. Webworm damage to bermudagrass often superficially resembles symptoms of some diseases. Flushes of soapy water can be used to determine the presence of sod webworm larvae.

Insecticide applications should be made when larvae are present and/or one to two weeks after peak moth flights from infested turf.

Retreatment may be necessary depending upon the location and number of generations.

Fall armyworm—In the South, summer always means the arrival of the moths of this migratory pest. Although in mild winters fall armyworms may overwinter along the Gulf Coast, it is generally believed that the moths are blown in on winds from Central and South America. Several generations occur each season, one about every five weeks. Generations overlap in the fall.

Lush, green bermudagrasses are preferred. By late June, fall armyworm damage to turf has usually been reported along the Gulf Coast. Damage is seldom permanent, unless drought and/or heat stress follow.

Fall armyworms may feed anytime during the day but are most active in the early morning and late evening.

Treatment is most effective at these times. During hot, mid-day hours, larvae may retreat into the thatch.

Fire ants—Fire ants are more difficult to control during hot, summer days because they are deeper in the soil. However, during rainy periods, they may become active and establish new mounds. Treatments during these months should be applied early in the morning before the heat of the day. Treat mounds as they appear.

Scale insects—Although Rhodegrass scale is present in Gulf Coast areas throughout the year, damage becomes most pronounced during the hot, dry days of summer. Bermudagrass and St. Augustinegrass are preferred hosts, but other grasses are also infested. Repeated treatments are required for control to be effective.

Ground pearls are scale insects that live in the soil throughout the year, sometimes eight to 10 inches deep. In the spring, eggs hatch producing nymphs that feed throughout the summer by piercing turf roots and extracting plant fluids.

Chemical control for ground pearls has not been effective at any time of year. Damage is most severe during summer months when the turf is stressed from heat and drought.

Centipedegrass is especially susceptible to damage, particularly when weakened by over-fertilization or drought. Proper fertilization, disease control and adequate irrigation to maintain healthy turf is the best defense.

Fall (Sept.-Oct.)

Chinch bugs—Damage by the southern chinch bug may continue in untreated areas. Late summer appli-

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cations of insecticide usually make fall treatment unnecessary.

Grubs—Most species of grubs are in the third of their three stages of development and are feeding actively. When soil temperatures decrease in late October and November, the larvae burrow deeper into the soil to overwinter. Severely cold winters have little effect on survival.

Treatments of existing grub infestations can be accomplished as late as mid-October, using standard grub insecticides. Treatment after this time may or may not kill the grubs before they move deeper into the soil to overwinter.

If the soil is dry, irrigation before treatment is advisable. Whenever treatment is applied, the grubs should be in the top one to two inches of soil.

Mole crickets—Mole crickets fly again in the fall, but no egg laying is known to occur at this time. The crickets are large and difficult to control in the fall. Damage becomes more severe as turf growth slows and cricket size increases. Some insecticides may work too slowly for adequate control of large crickets in October. Mocap granules, if not used earlier, can be used effectively at this time to provide up to four weeks residual control. Oftanol, if not used earlier, can be used in September, but works slowly and appears to be less dependable than when used on younger crickets.

Sod webworm—Except for the most southern areas where development is continuous, sod webworm larvae present in September will overwinter. Areas treated earlier in the season may be reinfested by this time. Treatment in early September reduces the population for next season.

Fall armyworm—Fall attacks on newly established turf from mid-September through October may result in damage that will not recover with fall fertilization. This forces the turf to enter winter in a stressed condition. Such damage can contribute to winter turf mortality.

If needed, apply controls early in the morning or late in the day when fall armyworms are most active.

Fire ants—Hot, dry periods in September and October may make fire ant control difficult. Once rain begins, fire ants become active and may be effectively controlled with mound treatments. Area treatments may be desirable in heavily infested areas with baits. **WT&T**

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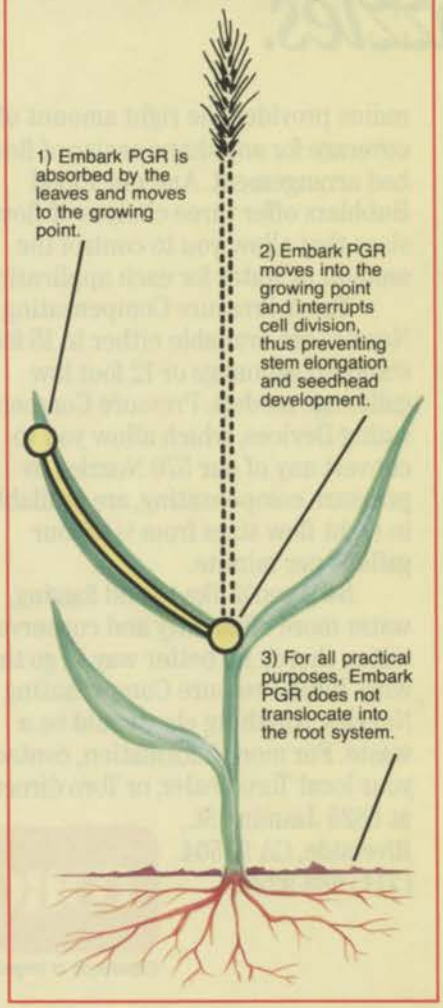

Thousands of groundskeepers and vegetation control managers have proven that one spray treatment of Embark PGR can eliminate the need of mowing for up to 8 weeks of such grasses as Kentucky blue grass, fescue, timothy, perennial rye, etc.

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Larry Farnell
Holy Cross Cemetery
Milwaukee, WI

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E.C. "Dutch" Reiner
Northern Natural Gas Co.
Farmington, MN

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EMBARK® PGR

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INSECT CONTROL GUIDE

WARM SEASON*	LATE WINTER (Mar.)	SPRING (Apr.-May)	SUMMER (June-Aug.)	FALL (Sept.-Oct.)
(SOUTHERN) CHINCH BUGS	In southern Fla. where resistance is a problem, use Pydrin, Pounce or Baygon as labeled for Fla. Replace susceptible turf with resistant or non-host varieties to provide natural control. In other areas, over wintered adults can be treated if they become active in March with diazinon (4 lbs. AI/acre), Dursban (1 lb. AI/acre) or Oftanol (2 lbs. AI/acre).	Application to prevent population build-up should be made by mid-April. Diazinon (4 lbs. AI/acre), Dursban (1 lb. AI/acre) or Oftanol (1-2 lb. AI/acre) provide control.	Control existing populations with Dursban (1 lb. AI/acre), diazinon (4 lbs. AI/acre) or Oftanol (1-2 lb. AI/acre) when damage signs appear. Southern chinch bugs are not as severe a problem in well irrigated turf.	Late summer applications usually make fall treatments unnecessary.
BILLBUGS	Treatment at this time can be done if adults are numerous and active. Use diazinon (4 lbs. AI/acre), Dursban (1 lb. AI/acre) or Oftanol (1-2 lb. AI/acre).	Treat when adults are active to prevent population build-up. Diazinon (4 lbs. AI/acre), Dursban ((1 lb. AI/acre) provide control.	Treat billbug grubs with Oftanol (2 lbs. AI/acre) if not used in spring; diazinon (5 lbs. AI/acre) Turcam (2 lbs. AI/acre). Irrigate following application; also before if drought exists.	If necessary, treat with diazinon, Turcam, Oftanol or Dylox/Proxol as in summer.
GRUBS	Application of Oftanol (2 lb. AI/acre) during March provides control of over wintered grubs. Control usually does not extend to new generation in July and August.	Infestations can be controlled during early April by spot or general treatment with Turcam (2 lbs. Ai/acre), Proxol/Dylox (8 lbs. AI/acre) or diazinon (5 lbs. AI/acre). Mocap granules (5 lbs.. AI/acre) can be used on golf courses and sod farms. Sevin (1.5-2 lbs. AI/ acre) is effective on green June beetle grubs; Sevin (8 lbs. AI/acre) against other grubs. Irrigate after treatment. Milky spore can be applied in early April for Japanese beetle control in areas where the grubs are numerous.	New generation grubs present in late July or by mid-August can be controlled with proxol/Dylox (8 lbs. AI/acre); Turcam (2 lbs. AI/acre); Oftanol (2 lbs. AI/acre); diazinon (5 lbs. AI/acre); or Mocap granules (commercial turf only at 5 lbs. AI/acre). Sevin SL (8 lbs. AI/acre) is effective against most grubs; (1.5-2 lbs. AI/acre) is effective against green June beetle grubs. Water immediately after treatment, also before treatment during dry summers.	Treatments are effective as late as mid-October. Irrigate first if soil is dry, then again after treatment.
SOD WEBWORMS	Treatment is not appropriate at this time.	Use diazinon (4 lbs. AI/acre), Dylox/Proxol (3.5 lbs. AI/acre), Dursban (1 lb. AI/acre) or Sevin (6-8 lbs. AI/acre) in April when larvae are present. Warm season grasses outgrow moderate damage, so treatments can be delayed until summer.	Make application to infested turf when larvae are present or two weeks after peak moth flight. Use diazinon (4 lbs. AI/acre), Dursban (1 lb. AI/acre), Dylox/Proxol (3.5 lbs. AI/acre) or Sevin (6-8 lbs. AI/acre).	Treatment in early September may reduce population for next season.

CUTWORMS	Treatment usually is not appropriate at this time.	Use Dursban (1 lb. AI/acre), Dylox/Proxol (3-8 lbs. AI/acre) or Sevin (2-4 lbs. AI/acre). Apply late in the afternoon. Do not irrigate unless specified on label.	Although cutworms in the South are usually a spring problem, if summer infestations occur, treat as directed for spring.	Treatment usually is not necessary at this time.
MOLE CRICKETS	Timing of treatments is critical and varies in different areas. In years when activity of overwintered mole crickets resumes early, treatment with Oftanol (2 lbs. AI/acre), diazinon (5 lbs. AI/acre) or Turcam (2 lbs. AI/acre) is sometimes effective. Extensive treatment should be delayed until young nymphs are present. Rolling, fertilizing and irrigating warm season grasses helps tunneled turf to recover.	Monitor infested turf weekly with soap flushes to determine presence and number of young nymphs. for short-residual treatment use Turcam (2 lbs. AI/acre) or diazinon (5 lbs. AI/acre) in late April or May; Orthene 75S (2-3 lbs. AI/acre) on wet turf, unirrigated after late afternoon treatment, provides quick knockdown. Baits are effective in central Florida in May when young nymphs are present.	For residual control, use Oftanol (2 lbs. AI/acre) if not used earlier or Mocap granules (10 lbs. AI/acre on commercial turf only) on young nymphs. Irrigate immediately. Baits are effective from central Florida northward during summer. Baits available are Baygon 2% (½ lb. /1000 sq. ft.): .5% Dursban (150 lbs./acre or two applications of 75 lbs./acre three weeks apart); malathion 2% (100 lbs./acre or two applications of 50 lbs./acre three weeks apart). Irrigate several hours before bail applications, and do not irrigate afterwards. Orthene 75S (2-3 lbs. AI/acre) can be used during summer, applied on irrigated turf late in the day and unwatered overnight.	Sprays of diazinon (5 lbs. AI/acre), Turcam (2 lbs. AI/ acre) or Orthene 75S can be used in areas where outbreaks occur and may have to be repeated several times. Oftanol (2 lbs. AI/Acre, may work slowly) or Mocap granules (10 lbs. AI/acre, commercial turf only) may be used, but don't use either more than once per season.
FALL ARMYWORM	Treatment is not appropriate at this time.	Populations usually do not develop until summer	Treatments are most effective in early morning or late afternoon. Use diazinon (4 lbs. AI/acre), Dursban (1 lb. AI/acre), or Proxol/Dylox (1-3 lbs. AI/acre).	Apply as directed for summer. Fall armyworms may be a greater problem in Sept.-Oct. than earlier.
FIRE ANTS	Treatments are less effective when soil temperatures are low.	Area treatments when new mounds being established in heavily infested areas with Amdro bait (1.5 lbs. bait/acre), Pro-Drone bait (.88 lb. bait/acre), Logic bait (1-1.5 lbs. bait/acre) or Oftanol (.05 lb. AI/1000 sq. ft.) are effective. Mound treatments in less infested areas include various diazinon or Dursban formulations; Orthene 75S dust (2 tsp./mound); or MC-96 mound fumigant (2 fl. oz./mound).	Treat mounds as they appear with various formulations of diazinon or Dursban; Orthene 75S dust (2 tsp./mound) or MC-96 (2 fl. oz./mound).	Apply controls to mounds or areas early in the morning or late in the day, as described for spring and summer. Irrigate dry areas or wait until rain before treating if drought conditions exist.
SCALE INSECTS	Treatment is not effective.	Chemical control for ground pearls is not effective at any time of year. Proper fertilization, disease control and adequate irrigation is the best defense.	To control Rhodegrass scale, apply diazinon (5 fl. oz./1000 sq. ft./25 gal. plus wetting agent). Retreatment is usually necessary.	Treat as directed with diazinon for summer.

* See accompanying text for details; always follow label directions.

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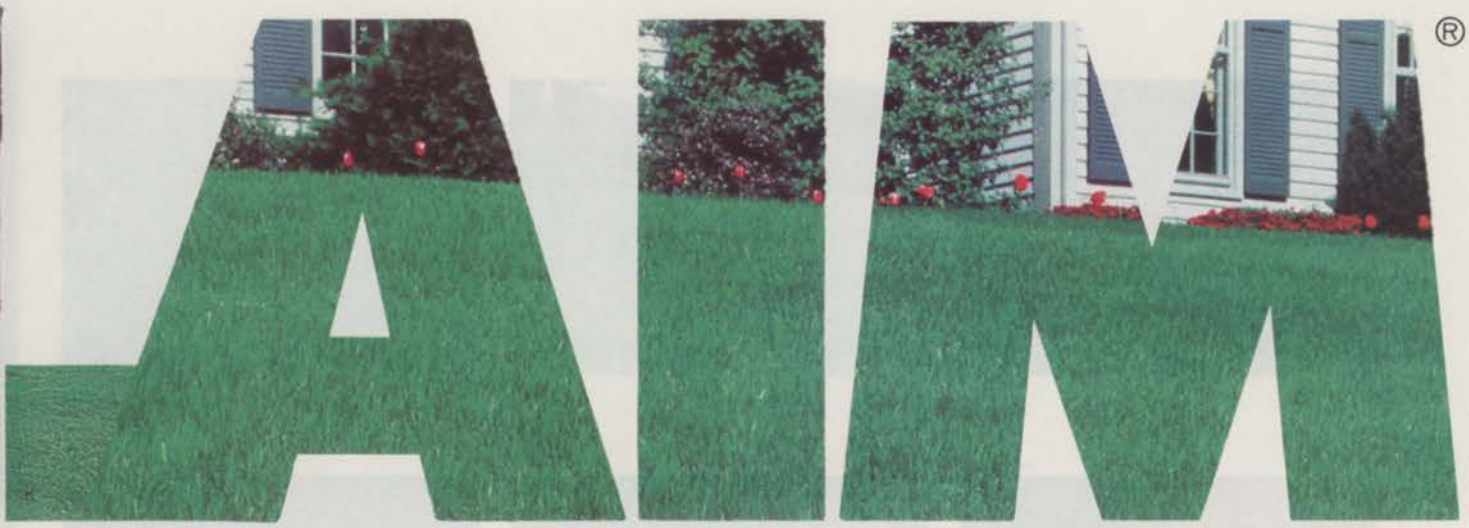

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DAMAGE DILEMMA

What insect caused this turf damage? Quiz yourself. Answers are at the bottom of the page.

1

2

3

4

5

6

7

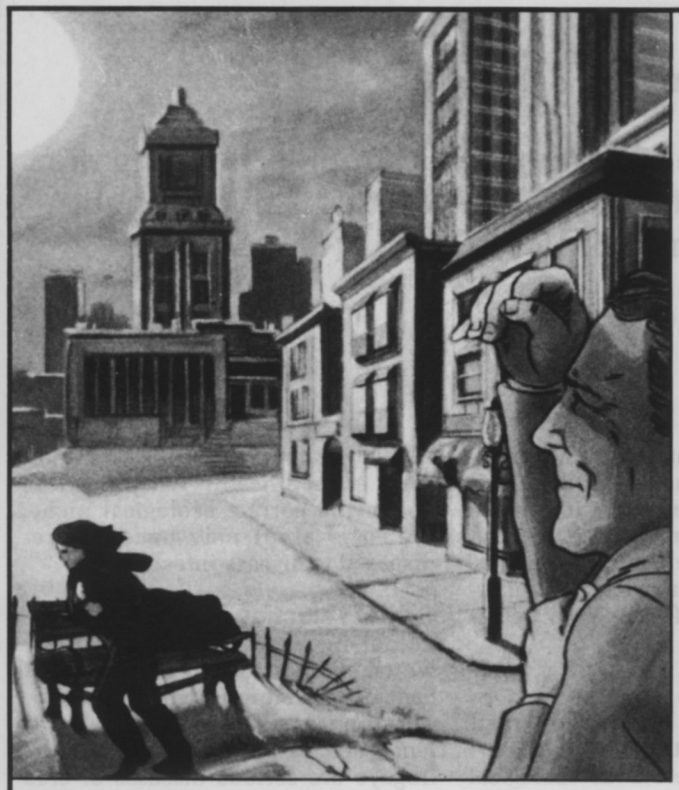
8

9

10

Answers:

1. Bluegrass billbug 2. Greenbug aphid 3. Grubs 4.Bluegrass billbug 5. Sod webworm 6. Winter grain mite 7. Chinch bug 8. Black turfgrass ataenius 9. Cutworm 10. Black turfgrass ataenius



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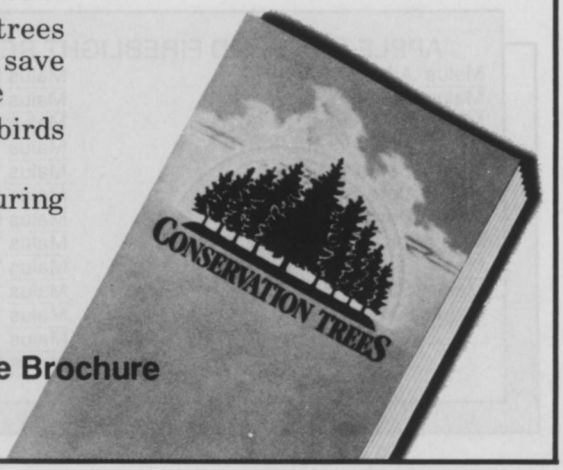

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THE RIGHT NICHE

Disease control on trees and ornamentals may be as simple as finding the right environment for the plant to thrive. But when that's not enough, follow this guide.

by Douglas J. Chapman

Disease or pathogenic organisms frequently infect stressed plants. This weakening, or predisposition of plants to disease, can be the result of transplanting, drought, high water conditions or not placing the plant in the right ecological niche.

Ecological niche has not been considered enough in landscape design or development. For example, junipers must grow in full sun or in well-drained, droughty soils.

Few disease organisms will attack healthy, vigorous trees, such as oak wilt on oak; apple scab on crab apple; or Dutch elm disease on elm. But, in general, disease organisms attack weakened plants, like Botryospaeria canker on *Cornus sericea*.

Promotion of healthy, vigorous plants or a holistic approach, is the key to disease management. The holistic approach includes, in order of priority, four strategies: ecological niche, clonal or varietal resistance, maintenance and disease control programs. Each of the four strategies is an important component of "integrated plant management."

Douglas Chapman is the horticulturist-administrator at Dow Gardens in Midland, Mich. He is also a WT&T adviser.

Ecological niche

Planting a tree or shrub in the right place is paramount to health and survival. If one understands ecological requirements of plants and tries to grow them where they will flourish, then healthy landscapes will be the result.

Birch *(Betula papyrifera)* is a pioneer tree. Thus, it must be grown in full sun on sandy (low to medium nutrient) soils. Conversely, sugar maple *(Acer saccharum)* is a climax forest tree. Therefore it will grow in sun or shade in fertile, well-drained soils. Frequently, we plant trees or shrubs in conditions to which they are not adapted and try to fertilize or water them to good health. When they are not in the correct ecological niche, then the plant may become predisposed to disease infection.

Clonal selection

Selecting and planting cultivars which exhibit resistance to disease is becoming a more important tool for reducing disease problems in the landscape. Fireblight, apple scab and frogeye are serious diseases of crab apple.

To eliminate the need for fungicide application, and thus a maintenance requirement, resistant cultivars such as *Malus* 'Sugar Tyme', *M. floribunda*, or *M.* 'Donald Wyman' should be planted.

Each area of the country must plant different cultivars of the same species to determine which cultivars are resistant in that region. Disease organisms have geographic races or strains.

Many lists of resistant cultivars exist, but some may not apply to your area of the country.

For Michigan, I have included a list of disease resistant crab apples to apple scab and fireblight and a list of disease resistant junipers to Phomopsis twig blight (see charts).

PHOMOPSIS TWIG BLIGHT RESISTANT JUNIPERS

Juniperus chinensis 'Hetzii'	Juniperus chinensis procumbens 'Nana'
Juniperus chinensis 'Ketelerri'	Juniperus chinensis sargentii
Juniperus chinensis 'Mint Julep'	Juniperus chinensis 'Upritht Hetzii'
Juniperus chinensis 'Pfitzeriana'	Juniperus horizontalis 'Douglasii'
Juniperus chinensis 'Pfitzeriana Compacta'	Juniperus sabina 'Broadmoor'
Juniperus chinensis procumbens	Juniperus sabina 'Tamariscifolia'
	Juniperus virginiana 'Tripartita'

APPLE SCAB AND FIREBLIGHT RESISTANT CRAB APPLES

Malus 'Adams'	Malus hupehensis
Malus 'Beverly'	Malus 'Indian Magic'
Malus 'Bob White'	Malus 'Indian Summer'
Malus 'Candied Apple'	Malus 'Mary Potter'
Malus 'Centurian'	Malus 'Red Baron'
Malus 'Coralburst'	Malus 'Red Jewel'
Malus 'Donald Wyman'	Malus sargentii
Malus floribunda	Malus 'Sentinel'
Malus 'Golden Harvest'	Malus 'Silver Moon'
Malus 'Golden Hornet'	Malus 'Sygar Tyme'
Malus 'Harvest Gold'	Malus 'Van Eseltine'
	Malus 'White Angel'
	Malus 'White Cascade'

Maintenance

Healthy, vigorous trees are the best protection against disease infection. When we transplant a tree, it is weakened until establishment. We should try to help the plant to become established as rapidly as possible by watering when needed, fertilize to stimulate establishment, and protect against additional injury, such as lawn mower damage or pruning. Further, any condition which may weaken a tree (change in grade, over-pruning, insect attack, or drought) must be countered by watering, fertilizing, mulching or any practice which will protect and revitalize it.

Soil compaction is an urban problem which must be addressed. Fre-

quently, people or vehicles compact the soil when it is wet, during construction or after the landscape is completed. This condition must be countered. Strategies to counter compaction include mulching, rototilling and/or core aeration. Watering with alkaline water, found in much of the Midwest, negatively impacts plants which need a slightly acid soil to survive. If the deficient condition is corrected, the plant resumes growth, but, if not corrected, then decreased vigor and predisposition to disease are the end products.

Disease control programs

Pesticides should be just one strategy used in the arsenal to prevent or cure disease problems. Fungicides can be protective or prophylactic (curing disease after infection).

Many fungicides—Bordeaux, captan, ferbam, etc.—protect plants from disease infection. These fungicides must be applied before infection, thus a complete understanding of the disease life cycle is a must. Further, this group of fungicides must cover the entire paret of the plant that can be infected including leaves.

A second class of fungicides is prophylactic, which control the disease after infection. Several examples of this type of fungicide include Benlate and Subdue.

One must still know the biology of the particular pathogen or disease when prophylactic fungicides are used. Further, this group of fungicides can be applied after a disease infection is evident. Fungicides are only effective if the correct procedures are followed.

One must select the most efficacious fungicide to control the specific pathogen. This information can be obtained by consulting a supplier, local university, extension bulletins and/or reading the label.

Pesticides must be applied to the plant at the site of infection or when it can be absorbed to control the disease. Timing of application is critical. If one is trying to control apple scab, the correct fungicide must be applied prior to infection when the temperature is optimal, during the spring and before a rain.

Disease control programs must be developed around the total landscape. One should grow the plant in the right ecological niche, use disease resistant cultivars, provide good maintenance, and use pesticides to help overcome temporary problems. Pesticides should not be considered the long-term solution to plant diseases or a healthy landscape. **WT&T**

Fungicides

The following is only a representative list of fungicides frequently used to control diseases of woody ornamentals. No endorsement of products is intended.

BENOMYL—a systemic fungicide effective against apple scab, powdery mildew, botrytis and anthracnose. The water should be acidified in regions where the water pH is above 6.5.

BORDEAUX—a protective fungicide for fireblight and many foliar diseases.

CAPTAN—a limited-use broad spectrum protective fungicide which is effective for many foliar diseases.

CUPRIC HYDROXIDE—a fungicide against many leaf spots and blights. Phytotoxicity has been noted as a problem - Read the label.

CYCLOHEXIMIDE—effective for powdery mildews.

FENARIMOL—locally systemic fungicide used for the prevention and control of powdery mildew. Reduced dosages are recommended when used under high humidity-cool-cloudy conditions.

FOLPET—specific for leaf spot diseases.

MANCOZEB—a combination of maneb and zinc salt, effective for a broad group of foliage diseases and blights.

RIDOMIL—a systemic fungicide absorbed through the roots that controls phytophthora and pythium. One of the few products effective for phytophthora on rhododendrons.

STREPTOMYCIN—an antibiotic specific for bacterial pathogens, e.g. fireblight.

TRIADIMEFOR—a systemic fungicide effective for the control of powdery mildew and rusts. Check the label. There are some precautions related to phytotoxicity.

VINCLOZOLIN—effective for the control of Botrytis sp. and Sclerotinia sp. on woody ornamentals, herbs and bulbs.

ZINEB—good for the control of foliar diseases, rusts, and blight.

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A bird's-eye view of a flowery courtyard at Phoenix's five-star Biltmore Hotel.

THE JEWEL'S GLITTER

At the Arizona Biltmore, you can eat marmalade made from the fruit of the hotel's own orange trees. The list of other trees and plants used on its 200 acres is mind-boggling.

by Carl Kovac

The Arizona Biltmore, Phoenix's world-class five-star resort hotel, is a place where you can stop and smell the flowers—and pick them, if you so desire. You don't even have to be a guest.

Opened in 1929 on 200 acres of citrus orchard land in the shadow of Squaw Peak, the Biltmore bills itself as "The Jewel of the Desert; a hideaway for the famous, the wealthy and those with discerning tastes." Ronald and Nancy Reagan honeymooned at the Biltmore. So did Harpo Marx and his bride. The guest list of national political figures, stage and movie greats and other celebrities is pages long.

Carl Kovac is a freelance writer based in Cleveland, Ohio.

The Biltmore has held a five-star rating for 27 consecutive years.

Contributing in no small part to the jewel's glitter are approximately 15 acres of carefully manicured grass, indigenous and naturalized trees and shrubs, and large, colorful flower beds.

An award-winner

Keeping all of this in award-winning shape are some 25 full-time employees under the direction of landscape manager Thomas Harrow. They obviously do their jobs well.

In 1983, the hotel was given the Environmental Quality Achievement Award by the American Hotel and Motel Association. The following year it earned a professional grounds maintenance Grand Award. In 1985, it won the Arizona Landscape Contractors' Association's Judge's Award and placed second last year in landscape and irrigation competition.

But then, this elegant oasis is no stranger to awards; the Biltmore has held a Mobil Travel Guide five-star rating for 27 consecutive years, longer than any other hotel in the United States. A petaled plaque planted in the hotel's North Patio—five purple alyssum "stars" in a square of white alyssum—extols this achievement. Flowery self-praise indeed.

Some 150,000 flowers—petunias,

pansies, snapdragons, begonias, stock dianthus and "a lot of geraniums" also are planted each October, Harrow says. "We plant flowers everywhere in the fall; under shrubs, behind the hotel—anyplace there's dirt.

"In the summer, we plant about 40,000 zinnias, vinca and portuluca. There are only a few flowers that can take 110-degree temperatures. We also like to rotate the flower beds in the summer, leaving at least one empty for six months. We treat each bed every three years with fungicides and add new potting soil and mulch."

Summer grass

Summer grass at the Biltmore is hybrid Tifgreen; winter grass is perennial rye. "Both go dormant about October," says Harrow. "In the fall we scalp thatch and overseed with about 14,000 pounds of perennial rye. In May, the summer grass automatically comes up, but we fertilize and do some thatching."

You'd expect to see a lot of palm trees dotting the Biltmore's landscape, given the location and climate. You'd be right. "There are five varieties of palms on the grounds." Harrow says, "But we also have palo verde, mesquite, some cactus, olive trees, fiscus, hibiscus, magnolias, evergreen pears, four varieties of pines and five different types of citrus trees. About 85 percent of the plant material on the hotel grounds is not native to the area. We're constantly getting new vegetation in the valley every year, which is why I have to keep going to school."

A tale of two gems: Gable-and-Lombard's and the Biltmore's

Frankly, Scarlett, he probably did give a damn.

When Clark Gable, who shall forever be remembered as Rhett Butler in the screen classic "Gone With The Wind," lost his wedding ring on the Arizona Biltmore's Adobe Golf Course, it's safe to assume he was at least somewhat concerned. How would he explain this to his wife, Carole Lombard? A wedding band simply doesn't fly off a finger, no matter how powerful the golf swing.

As luck would have it, however, a greenkeeper found the ring and returned it. Gable was reportedly "overjoyed."

The King was just one of hundreds of movie stars, big-name entertainers and athletes, politicians, public figures and other celebrities whose spikes have punctured the turf of what is now the Arizona Biltmore Country Club over the years.

A guesthouse like the one in which Clark Gable and Carole Lombard may have stayed.

The club consists of the 6,783-yard Adobe course, which went into operation in 1929, and the 6,397-yard Links Golf Course, which opened in 1976. Both are par 72.

Once a part of the resort hotel, the club became a separate entity in 1977. It is now owned by Phoenix businessmen Art Martori and Alan Mishkin and the Rostland Corp., headquartered in Toronto, a former owner and now supervising manager of the Biltmore.

Club membership is 350, but non-members are welcome on a tee time-available basis. Biltmore guests are offered reduced greens fees and preferred tee times over other non-members. Play averages 100,000 rounds a year, according to golf course supervisor Turner Reany.

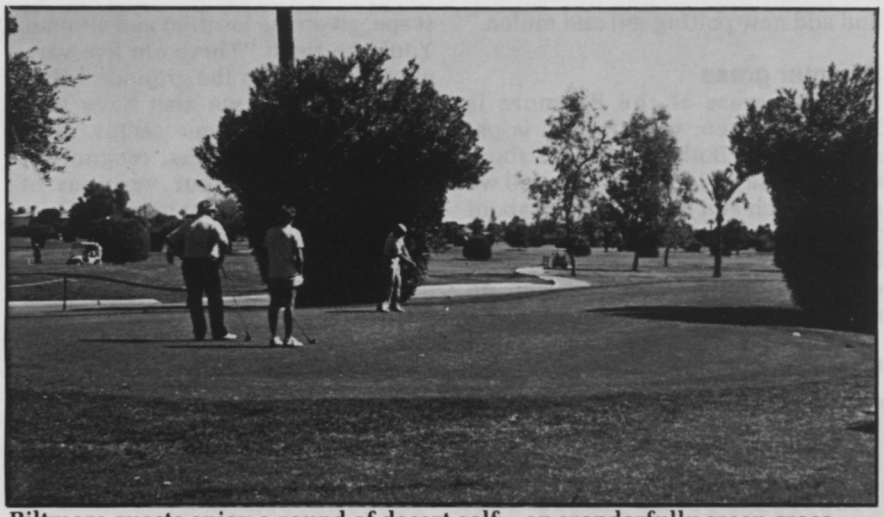
With an annual budget of $800,000, Reany oversees a crew of some 32 greenkeepers, equipment operators, mechanics, foremen and laborers. His equipment inventory includes seven riding mowers for maintaining greens, two hydraulically-driven reel mowers used on fairways, two rough mowers, two triplex mowers for collars and tee banks, three trap rakes, five vacuums for manicuring and clip sweeping, and 17 carts to move his crews around.

Common bermudagrass is used on fairways and roughs and hybrid bermuda on tees and greens. The courses are overseeded every October with perennial ryegrass. "We shut down one course while we overseed the other," Reany says. "We also have underground, wall-to-wall automatic irrigation. We water the courses daily. We're dealing with temperatures up to 115 degrees in the summer and in the 60s in winter."

Reany reports few problems with pests and weeds. "We spray Dursban and diazinon as needed to kill cut worms and sod webworms on the greens and use preemergence sprays to control crabgrass, goosegrass and poa annua."

That Reany and his crews keep the two courses in tournament condition is attested to by the fact that the LPGA has chosen the Arizona Biltmore Country Club as the site of its annual Sandstone Turquoise Classic the past four years.

—Carl Kovac



Biltmore guests enjoy a round of desert golf—on wonderfully green grass with lush vegetation all around.

Citrus plantings include orange, lemon, lime, grapefruit and tangello trees.

"We also have some sour orange trees," Harrow says, noting that "the fruit is picked each year and used by the hotel for marmalade."

The arsenal

All of this—grass, flowers, trees and shrubs—is watered by an automated underground irrigation system. Use of insecticides is limited "as much as possible," says Harrow, "for the safety of the guests and employees. We try not to spray. We inject the trees and use spreaders to apply granular insecticides to the flower beds. We do use 100-gallon sprayers to fertilize the grass and flowers."

Included in the Biltmore's landscaping inventory are two tractors, two triplex reel mowers, 18 power mowers, cord trimmers, chain saws, turf vacuums and electric carts to enable crews to get around the grounds.

"We also have our own street sweeper," Harrow says. "There are 15 acres of parking lots and streets on the property, and we clean them daily."

Unlike some posh resort hotels, the Biltmore has a policy of opening its grounds to the public. "We have one-hour Arizona Biltmore Grounds Tours twice a week. We get a lot of interest from organizations and schools," reports Harrow, who leads the the tours. "We want the public as well as guests to use the grounds; to enjoy the flowers and pick them, if they want to.

"We have weddings, circuses, auto shows and even rodeos here, with as many as 1,500 people out on the grass," he adds. This makes it hard on Harrow and his crew at times, but they don't seem to mind. "After an event, it's up to us to go out the next day and restore the grounds like nothing ever happened. And we do it. These people (the landscaping crew) really enjoy their jobs." **WT&T**

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ROYAL FLUSH

When Prince Charles played polo in Chicago last fall, the field had to be in prime condition for spectators and TV cameras. The field managers worked overtime to prepare the field.

by Heide Aungst, associate editor

It's a field fit for a king. Or, a future king, anyway.

When H.R.H. Prince Charles of England travelled to Chicago to play polo at the Oak Brook Polo Club, the Windy City rolled out the red carpet. Jim Mello and his crew rolled out the green field.

In March 1986, Mello, president and owner of Nice 'N Green products, took over the care for the three polo fields adjacent to the renowned Butler National Golf Club.

At one time, Butler National was a vast expanse of 14 polo fields. That was in 1922, when the Oak Brook Polo Club was founded. Today, the polo fields double as Butler National's driving ranges...a convenience for the golf course, a headache for the field managers.

But the only person worrying about that on this cool, sunny September afternoon is Steve Mello, Jim's nephew, who heads the polo field crew of four. "It needs time to heal," Steve says, shaking his head.

How can the field survive golfers' divots immediately after eight horses have torn up the turf? The spectators do all they can to help.

It's a polo ritual for fans to run onto the field at half-time—or, between chukkers, that is— to replace the divots. The thousands of polo-watchers—the men clad in silk ties and designer suits, the women hanging on to their Princess-Di-look-alike hats, and causing their own divots with their spiked heels—run onto the field to stomp divots back into place. It's almost as much fun for the fans as sipping champagne out of silver goblets in the grandstand.

"It's really a big help to me when they replace the divots," Steve tells a Chicago radio reporter, who got an exclusive with the divot expert after eavesdropping on the WEED TREES & TURF interview. The entourage of media at the polo match try desperately to find interesting angles surrounding the royal visit, since Prince Charles won't grant interviews.

The royal ball, by all newspaper reports, was a bloody success.But no one complains about a dance floor the way they complain about a polo field.

But the excitement of the day has to make the field abuse worth it. "It's a pain in the neck, seriously," Jim says. "It's just a lot of work, a lot of expectation and pressure. I'll be happy when it's over. It is kind of exciting, though."

Most of the excitement for Mello came the night before the match when he and his wife Sheila attended the Polo Ball on the top floor of Marshall Field's department store. Sheila, a professional dancer danced with the Prince.

The royal ball, by all newspaper reports, was a bloody success. But, no one complains about the dance floor the way they complain about a polo field.

When the Prince and several other players fell off their horses, spectators immediately blamed the field. "It's too wet," snarled one fan.

Prince Charles, #4, greets the crowd before the polo match. (Photo by Nancy Devon)

But Steve immediately jumped to his field's defense. "It's not the field," he says. "We watered it about one inch on Wednesday (two days before the match), and it rained about 2/10 of an inch that night."

The crew had to work extra to get the field in top shape for television viewers.

They usually water two or three days before a tournament, using a water wench, traveling sprinkler, which throws out 700 gallons a minute. The system completely waters the field, 300 yards long by 150 yards wide (more than nine football fields), by passing over it twice.

The amount of moisture on the field significantly affects play. "If the

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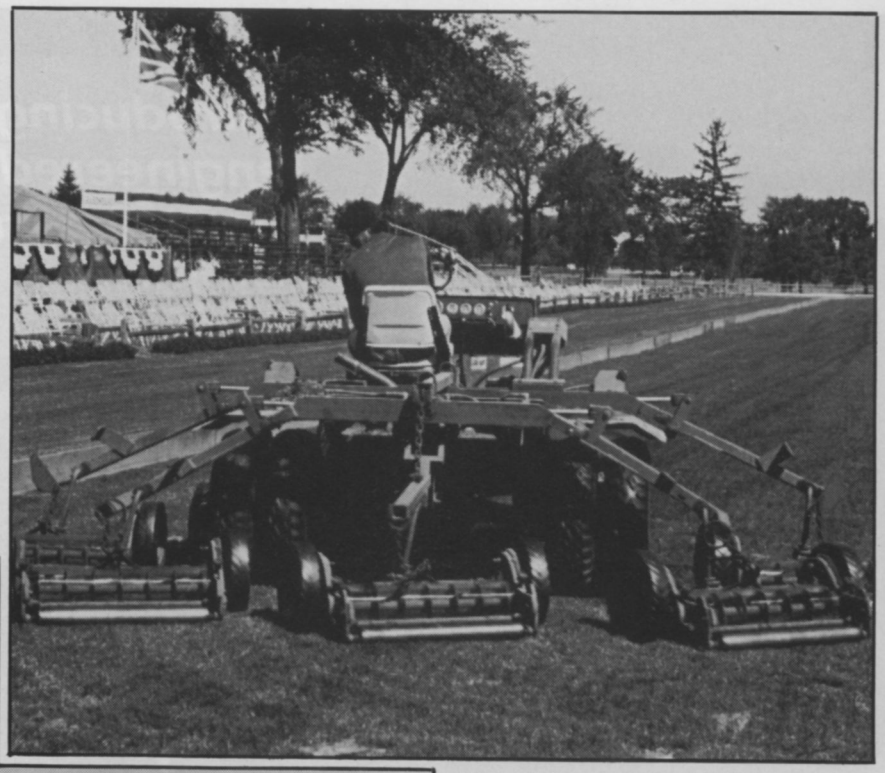
field is too hard or dry it's tough on the horses. A horse can't get its footing and slides over the turf," Jim explains. "If it's too wet, the horse digs in and it tears up the field worse."

The divots and the height of cut also affect the ball roll. Steve double-cuts the field at a height of 1 1/2 inches on the day of a match. The double-cutting increases the speed of the ball.

The crew usually mows the field three times a week, using a Toro Parkmaster, at 1 1/2 inches during the season. They raise the height to 2 1/2 inches after the season is over to let the turf recuperate.

The bluegrass on the field is a mixture of Ram I, Touchdown, Adelphi, Cheri, and Glade. The dirt and seed mixture used to fill in divots is a 50/50 blend of Manhattan II and All*Star ryegrass, which germinates quickly.



(Above) Steve Mello double-cuts the field on the day of a match.

(Left) Jim Mello, owner of Nice 'N Green, overlooks the polo field before the big match.

Jim says he would like to re-seed the field using turf-type tall fescues which require less water than bluegrass.

Turf is fertilized with Nice 'N Green's liquid iron four times a year and a dry application in early winter. The crew aerifies in spring and fall.

"The horses are my best weed control," Jim says. His biggest weed problem is knotweed, which grows in wet areas with poor drainage. The crew usually spot-treats the problem, but waits until the season ends to treat it full force.

At the end of the season the field is renovated through slit-seeding, top dressing, and dragging. That's all repeated again in the spring.

"I could take care of Comiskey Park, no problem," Steve says. "After this it would be a piece of cake."

Getting the field ready for the royal visit and television cameras which zero-in on the field was a lot of work for Jim, Steve and the crew, but it was a lot of satisfaction. "This is my big day," says Steve. "I feel like I'm the fifth member of the team."

And that team was a winner. The U.S. beat England, 12-10. **WT&T**

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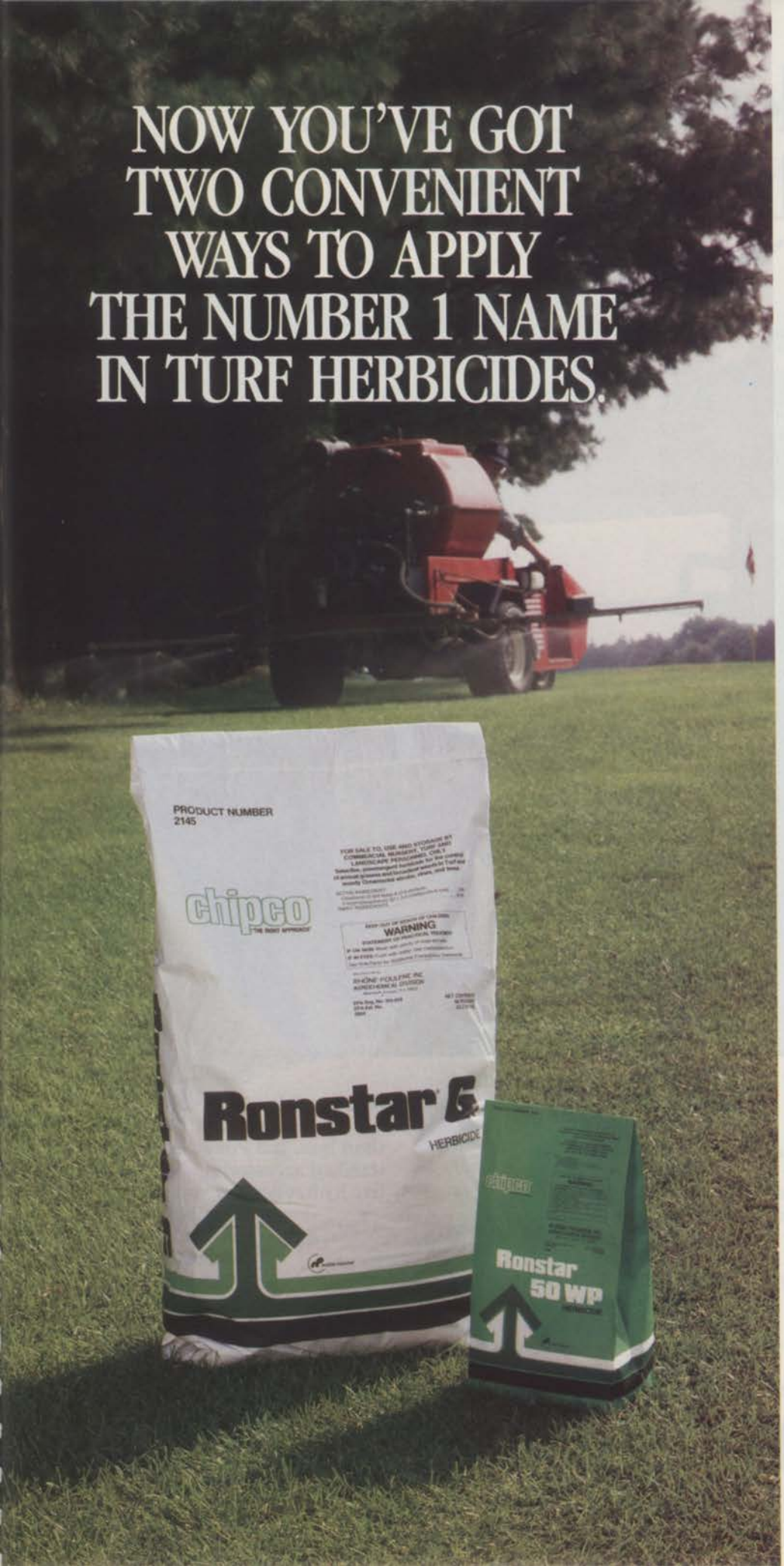

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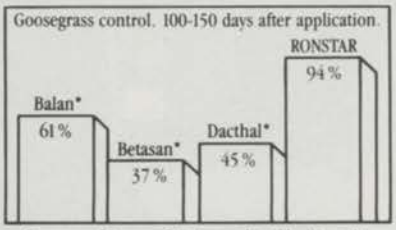

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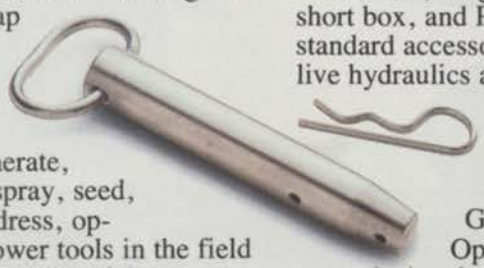

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GOVERNMENT GLOOM

Working within the framework of a bureaucracy can give government workers the blues. Here are what some must cope with en route to doing their jobs as effectively as possible.

by Jeff Sobul, assistant editor

It's not just having limited funds that makes it frustrating. It's that, when working in a bureaucracy, managers have to go through so much trouble to get their money.

While bureaucracies exist in the private sector as well, the vast majority occur in the public sector. From the tiniest municipality to the largest state, government landscape managers often must deal with miles of red tape to get funds. Getting additional funds above and beyond the budget is even more difficult.

Buddy, can you spare a dime?

For some, like Kenneth Grothous, superintendant of parks in tiny Delphos, Ohio (pop. 7300), getting the same budget allocation as in 1986 would be nice. Unfortunately for Grothous, $40,000 of his $140,000 1986 budget came from federal revenue sharing, all of which he has lost this year. In addition, his $100,000 operating budget has been cut another $10,000. With most of the operating budget paying six to eight maintenance workers on staff from April through November, little is left to get necessary work done.

Grothous divides the rest among maintenance of the city football stadium in which two high school teams play, baseball diamonds, and the town swimming pool. The pool is the city's main source of income, and thus the highest priority. Grothous plans to add a water slide to the pool in hopes of boosting revenues.

"(The town) needs to take more steps to increase revenues, such as a special operating fund for projects on existing facilities." he observes. However, he expects revenue sharing to return—in some form—after 1987 because of pressure from municipalities.

Carrol Arledge of the Clinton, Miss. parks and recreation division has the help of a two-mill tax levy. He feels his seven-person staff is adequate to maintain the city's 128 acres. The land includes a sports complex, a BMX racing track and five neighborhood parks (mostly picnic areas) for the town of about 15,000.

However, his small budget limits plantings. Given more funding, he adds, "I'd do a lot more landscaping."

For purchases between $500 and $1,500, Arledge must get three estimates before one is approved by the city. For projects above $1,500, he is required by law to advertise for two weeks to get bids. Though Arledge wishes the process were faster, he believes that it's still good policy because it makes spending more accountable.

Arledge's biggest problem, however, may come from the possible loss of diazinon. It has been his most cost-effective way of dealing with armyworms and fire ants, a common and dangerous problem in the South. If the situation continues, he will have to find an alternative—which will in all likelihood be more expensive.

Similar problems exist on a larger scale in other cities. Mark Gillespie, who manages public land in one of Charlotte, N.C.'s four park districts, would love to add more people to his staff, "but it's difficult to make a case for additional personnel when facilities are added," he says. "You have to make a well-documented case in order to get more people."

His district is staffed by 25 full-timers, with 10 people added during the busy season, although there's no real slow-down of work during the year because of back-up. Gillespie would like to add one more five-person crew and three temporary people. Without this help, he says, during the summer his district just tries to stay even with the work. "Wintertime is the time to make advancements. In winter, my priorities shift to improv-

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ing."

As with Grothous, Gillespie makes a priority list for his two-year budget (which comes in one-year increments). "You have to concentrate on areas in the public eye," he says. His main priority is Memorial Stadium, which hosts the Shrine Bowl college football all-star game each December. Other priorities include preparing for various festivals and maintenance of the grounds of Discovery Place, a nature and science museum.

"It's a constant juggling of resources," Gillespie says. "You let areas go that don't get as much attention. But that catches up with you." To help with the juggling, the parks department recently hired a budget analyst.

He has had to stretch out his mowing schedule in order to cut costs some. His department is also using plant growth regulators on rights-of-way.

Most of the work his department does is horticulture-related, including landscaping and tree work (takedowns, pruning, planting, etc.). As a result, Gillespie spends a lot of money on pesticides, but he again runs into red tape because of hiring constraints.

"We need people with pesticide applicator certification," he says. "The personnel department doesn't realize this." Despite this, he adds, "We're really conscious of pesticide safety." His people always have up-to-date safety information.

Slip slidin' away

Transportation department personnel nationwide, struggling with nature to keep rights-of-way clean and safe for motorists, railroads and public utility companies, also operate within bureaucracies.

Research shows that growth regulators can save states between 30 and 50 percent on mowing costs.

And with budget limitations imposed by state legislators, transportation department employees must make due with what they have, also establishing a priority list to allocate money where it is most beneficial and necessary.

Though priorities often differ from region to region across the country, some seem to be cropping up as often as weeds along a highway. A major concern for most transportation departments is erosion control, both during and after rights-of-way construction.

Boyd Cassell of the Virginia Highway Department says every construction project undertaken in the state includes erosion control measures. Considerations for control during and after a job are worked into the project budget, he adds.

Cassell's control methods during construction include silt barriers, geotextile use and fences for slope protection. The key to post-construction control, he says, is re-establishing vegetation as quickly as possible. This includes sodding and planting shrubs and trees.

Bill Johnson of the North Carolina Department of Landscape Engineering uses similar methods. "We are required by law to re-establish vegetation, using grass, seed, shrubs and the like," he says. In addition to geotextiles, he also incorporates fiberglass drainage ditches into the construction project. His office is involved throughout the life of each project.

Limiting growth

Once vegetation has been re-established, controlling its growth becomes a major concern. States in the temperate Southeast, where a full growing season translates into frequent mowing, have been using growth regulators with increasing frequency.

Jeff Doan of Technomic, a market research company, has done $750,000 in research on the rights-of-way pesticide market. He says that nearly all of the states from North Carolina and Tennessee south, and from Louisiana east, are using PGRs.

"PGRs are economical if they work," Doan comments. His research shows that growth regulators can save states between 30 and 50 percent on mowing costs.

Virginia's Cassell has also used PGRs successfully on a limited basis. "We use it around guardrails and other narrow areas," he says.

Whatever the extent of use PGRs are getting in the Southeast, their economic benfits suggest that while they may keep grass from growing, their use in vegetation control will continue to grow. And in a situation where every penny counts, and is accounted for, a cost-reducing agent is always welcome. **WT&T**

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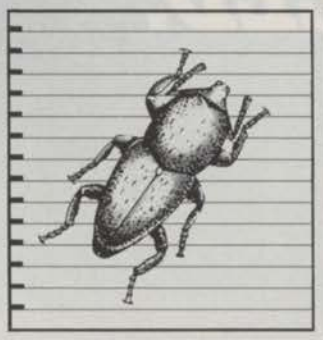

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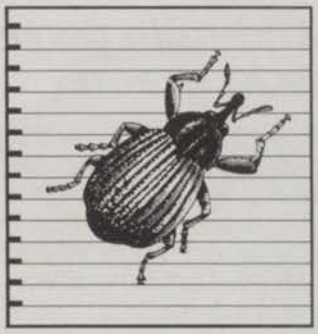
Chinch Bugs

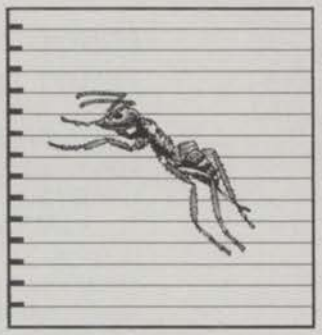
Grubs

Army-Worms

Sod Webworms



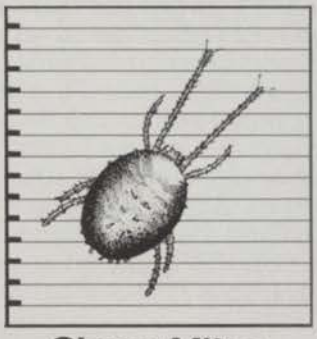
Turf-Grass Weevils



Ants

Grasshoppers

Mosquitoes



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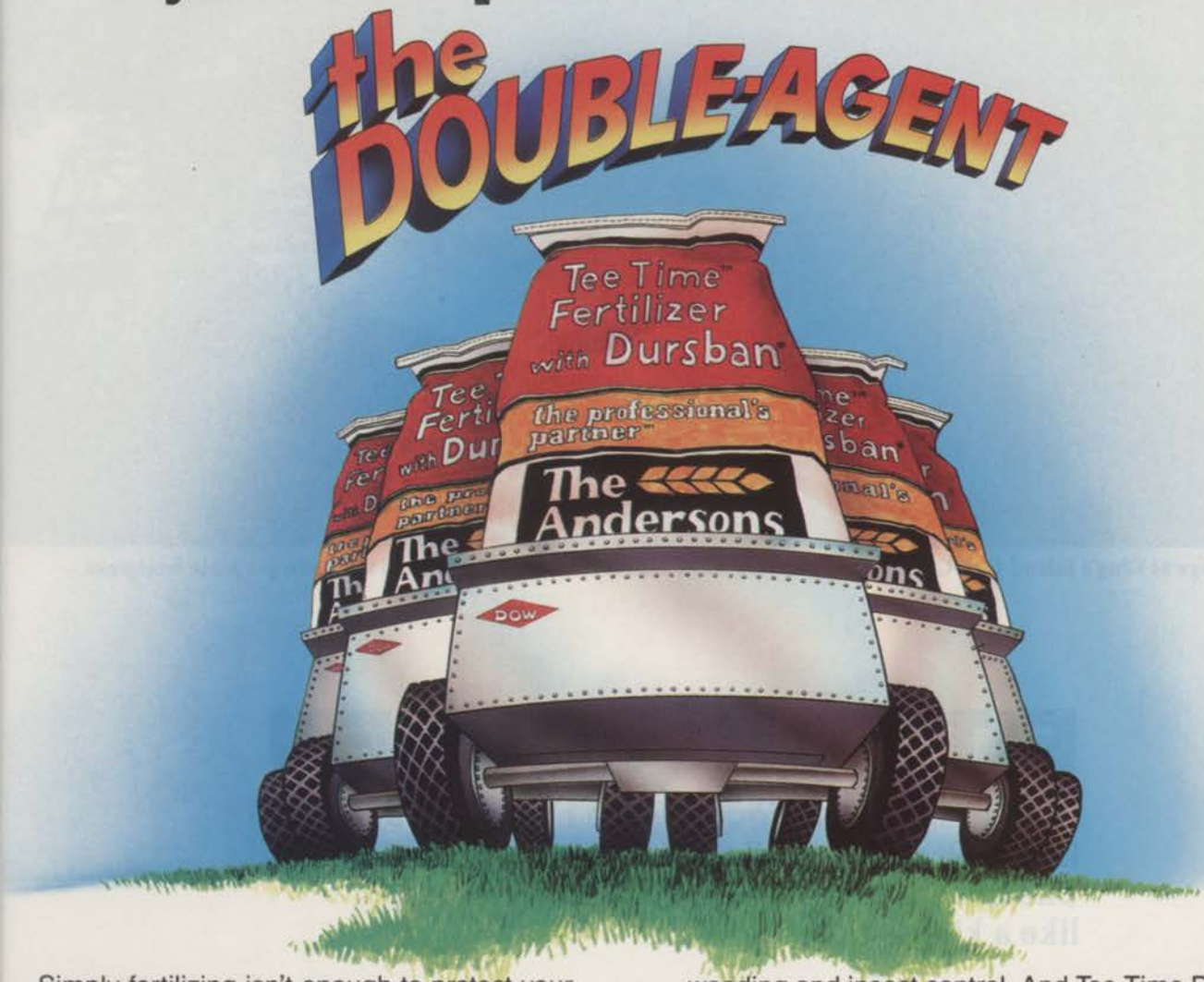

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Circle No. 102 on Reader Inquiry Card

Fairways at King's Island Golf Course have recently been converted from bluegrass to the more playable bentgrass.

FIT FOR A QUEEN

King's Island Golf Course is the home of the Ladies Professional Golf Association championship. The queens of golf treat the superintendent like a king—and vice versa.

It's a superintendent's dream, right? Just situate a golf course between a popular amusement park, the College Football Hall of Fame, and the center-court home of a Grand Prix tennis tournament. Then, as an added touch, arrange to have the LPGA stage its championship there each year.

Initially, practically everybody associated with the King's Island Amusement Park and the Jack Nicklaus Sports Center near Cincinnati, Ohio, thought it was time to sit back and watch the tee-off line wind down to the Ohio River. Superintendent John Hamilton admits it seemed logical to him, too.

On the contrary, however: the 14-year-old, 36-hole golf center has thrived in spite of the surrounding attractions, not because of them.

"We foresaw the scenario as dad drops off mom and the kids at the amusement park and heads to the course for 18 holes," says Hamilton, whose 40-person staff maintains the grounds for all of the complex's facilities. "But we've observed the situation, and that's just not the case. We have our clientele and they have theirs."

In 1972, Kings Island owner Taft Broadcasting decided that a golf course would make a nice addition to the complex. Jack Nicklaus was just becoming intrigued by golf course design and management, and he teamed with community planner and golf course architect Desmond Muirhead in the design of two courses: the 18-hole Grizzley, a challenging tournament course; and the 18-hole Bruin, a shorter, recreational course.

Muirhead's influence manifests itself in long, multi-curved fairways with large trees retained as natural hazards. Nicklaus' now-famous design style—sloping bunkers and rolling terrain—was already evident. Originally, the tees and greens were bentgrass, and the fairways were bluegrass. The fairways have now been converted to a more manageable, better-playing bentgrass.

The women come 'home'

In 1978, the Sports Center became home to the LPGA championship. Winners since then have included Nancy Lopez (1978 and 1985), Patty Sheehan (1983 and 1984), and Pat Bradley (1966). From the very beginning, the relationship between the LPGA and Hamilton has been based on mutual admiration.

"I think they're wonderful people," Hamilton says. "The organization and

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The 7,500-seat stadium where the ATP championship has been played every year since 1979.

the golfers have been great to work with. We bend over backwards to accommodate them, but we do it because we want to."

And the LPGA has noticed. "They look forward to coming here," Hamilton says. "They've made comments to me that this is one of the best maintained courses and best organized tournaments on the tour."

A photo in Hamilton's office of an LPGA golfer giving him a peck on the cheek serves to underscore his description of the working relationship. The good feelings help to soothe Hamilton when he realizes how much money the course loses every year at tournament time. "We close the course for six days before the tournament," he says. "At $15,000 a day, we really don't recoup our losses through the publicity the tournament generates. It really is a privilege to have the championship here, but it's not a free privilege."

Enter the netters

In 1979, a 7,500-seat tennis stadium was added to the Sports Center for the Association of Tennis Professionals Championship. The winners list since then includes John McEnroe and Mats Wilander, and attendance has been outstanding. But it's been far from a boon to the golf course.

"You could fire a cannon down the middle of a fairway during the tournament," Hamilton said. "Parking is tough, for one thing, but the biggest problem is the perception that the golf course is closed. We have to buck up our advertising to get some people on the course."

But Hamilton, his staff, and the rest of the management of the Sports Center have managed to get plenty of people on the course throughout its history. He cites two reasons: courses that can be everything to everyone; and the green, green grass that warms a golfers heart.

The flexibility of the golf center begins with the two contrasting courses. The Grizzley challenges even the pros, and the Bruin offers an easier alternative for families, novices or people with little time to spare. In addition, an extraordinary selection of tee and pin placements allows the courses to take on vastly different looks.

Flexibility is a necessity, Hamilton says, because 25 percent of the golf center's business is corporate outings, which bring along golfers of vastly diverse talents. "Grizzley has to be tough for the tournament and a little easier for outings," he explains.

Dumping the water

Hamilton attributes the quality of his turf to an extensive irrigation program and a tank-mix of two fungicides, a systemic and a contact. During the season, Hamilton has 750,000 gallons of water pumped onto the course each night, seven nights a week.

"I see it as preventive medicine," he says. "Keeping the microclimate (the six to 12 inches just above the turf) reasonably cool during the hot season can prevent a lot of grief with disease."

Hamilton's other preventive medicine is a tank mix of Bayleton and Daconil turf fungicides. Bayleton is a systemic fungicide and Daconil is a contact turf fungicide, which, combined, prevent "just about everything," he says. "Particularly dollar spot in this hot, humid environment."

The chemicals are applied every four weeks, but Hamilton suspects they would last longer. "I'm not going to take the chance on the courses, but I'd love to do a test plot on it," he says.

So what Hamilton doesn't see means the golfers are happy with what they do see—green, green grass. Happy enough, in fact, to play more than 40,000 rounds per year.

In spite of all the surrounding distractions. **WT&T**

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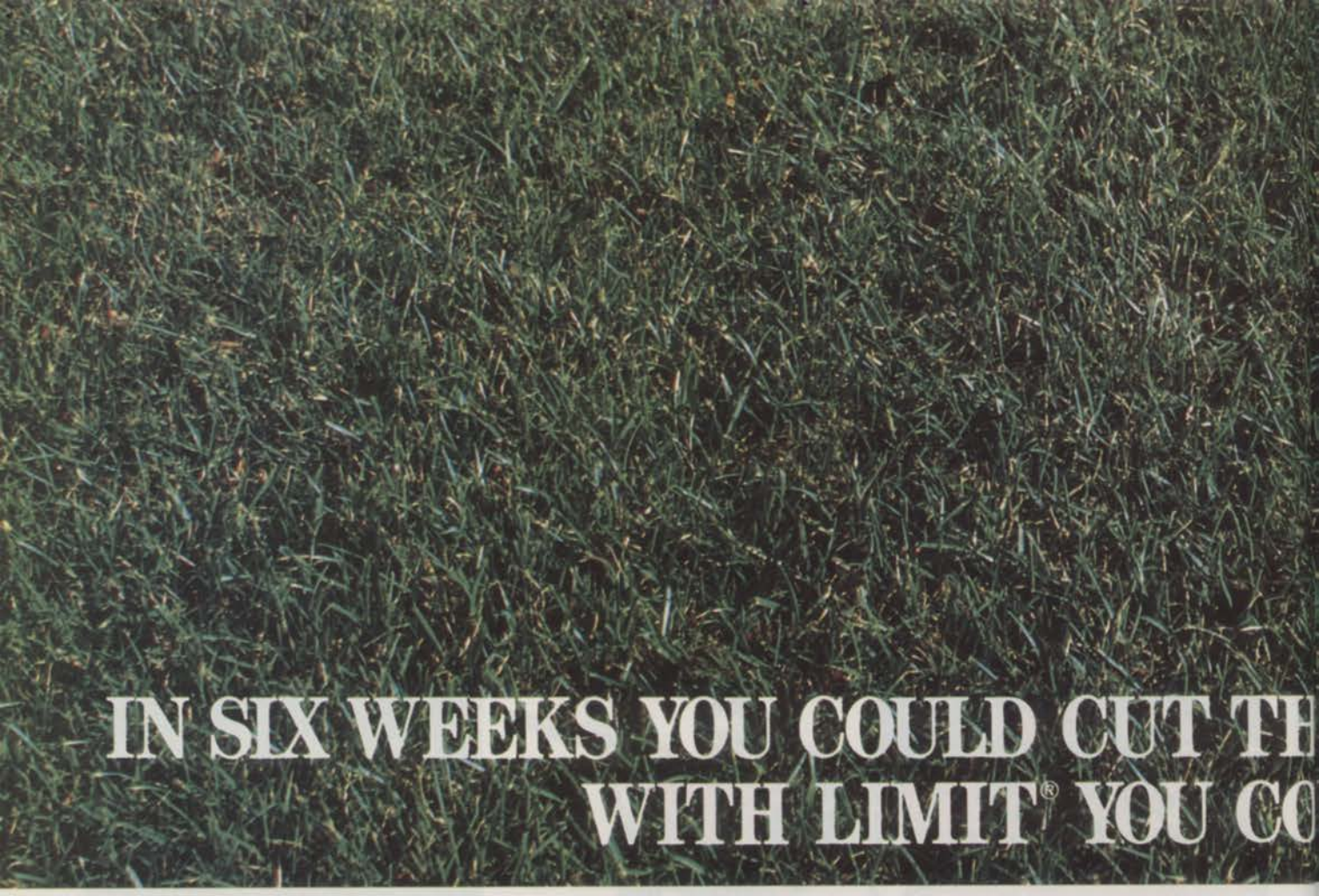

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Circle No. 255 on Reader Inquiry Card

80 AND GOING STRONG

The Illini Country Club may be 80 years old, but this 'Mike Royko' keeps the spirit of the course going strong.

Illini Country Club superintendent Mike Vogt uses charcoal briquettes as tree fertilizer.

The grounds of the Illini Country Club in Springfield, Ill., possess that extra "something" that tells you someone is working awfully hard.

Even though the Illini Country Club is observing its 80th birthday this year, much of its attraction comes from newer changes blending with its dignified charm.

This current renewal, in no small measure, results from the interests, the guidance, and the imagination of talented superintendent Mike Vogt. He has been the Illini superintendent for five years—long enough to have left an imprint on the landscape's appearance.

Say cheese

Someone has written, "Fortunate is the man who can make his hobby his work."

Vogt has been able to do that. Yet, there is more to it than making a hobby his work.

He is a skilled writer and photographer who has applied these skills to golf course management. The result has been national recognition in the Golf Course Superintendents' Association of America.

Last February "The Ballmark," official publication of the Central Illinois Golf Course Superintendents' Association, won first place in the GCSAA's national competition. Vogt edits it. "The Ballmark" has more the look of a magazine than a conventional newsletter. It measures 8½ inches by 5½ inches in size and features a full color cover.

An average issue runs 34 to 36 pages, including advertising pages. Typographically, it is the equal of any first-line publication.

Superintendent Mike Vogt shows off his award for best newsletter.

Editorials represent an avant-garde development in the newsletter field—a Vogt innovation.

"I'm sort of the Mike Royko of the superintendents' association," Mike says. "I'll take on controversial topics just to get some conversation started."

Vogt says editing the newsletter has made him a better superintendent. "In order to get good material for the newsletter, I have to read a lot. That is a learning experience, and a lot of what I learn I can put to immediate use at the Illini Country Club."

Vogt will tell you he came into a job where pride of workmanship has been a long-standing tradition. In the Illini Club's 80 years, he is only the sixth superintendent.

Worker loyalty is also a plus. Vogt has good things to say about the 16 workers who maintain the course.

In launching his program of renewal, Vogt supervised the planting of 626 trees in tasteful vists over the 110-acre golf course. He has relied heavily on willow, ash, honey locust, white pine and oak. Mike has his favorite method of fertilizing, too.

Charcoal fertilizer?

"I like Woodace Briquettes. We will just drop three Briquettes into a hole by a newly-planted tree, and cover them up," Mike says. "We have made some comparisons between fertilized trees and non-fertilized. You can see the results by the end of the first season. Fertilized trees will be bigger, have greener leaves, and will just be further ahead.

The future looks good for Illini Country Club, too, Vogt says. "When this place got started in 1906, it really was a "country" club. It was converted farmland well out from the city of Springfield. Now it is surrounded by homes and shopping centers.

"Still our membership stands at 465 golfers, and there is a year and a half waiting list," Vogt notes. This is in a city of just over 100,000 residents and which has eight golf courses. "The first step to qualify for the U. S. Open starts here. Illini has hosted the qualifying round for the last 25 years," Vogt points out.

For those players, a nicer 110 acres will be hard to find. **WT&T**

Scotts ProTurf.

Joe, why is it important to have a fungicide that will work against a lot of different fungus diseases? "At any given time, conditions may be right for three or more different fungus diseases. And others may be dormant in your turf, waiting for conditions to change. You never really know what you'll be up against next."

What makes Fertilizer Plus Fungicide VIII so special? "It's a broad-spectrum fungicide—among the broadest on the market, in fact. It handles dollar spot, brown patch, leaf spot, red leaf spot, and pink snow mold. And it's a double-barreled weapon against disease: it works first on contact for quick action, then systemically for additional protection."

Sounds like that would be helpful to any turf manager. "Sure would. It makes things a little handier—you don't have to pick and choose from among several products for the best treatment."

What about follow-up outbreaks of those diseases? "You don't have to be as concerned about future disease problems, because Fertilizer Plus Fungicide VIII does more than just cure. It's also effective as a preventative."

How often should you apply it? "Every 10 days to 3 weeks, depending on the severity of the disease pressure."

Won't that be too much nitrogen? "No. At the recommended application rates, you'd be using a modest amount of nitrogen consistent with the development of quality greens."

How does the price compare with other alternatives? "The pricing is very competitive. Considering that the alternative is normally a combination of products—which may even call for different methods of application—I think a lot of turf managers will end up saving money with this fungicide combination."

For more information about Fertilizer Plus Fungicide VIII, call your ProTurf® Tech Rep. Or call Scotts® direct at 800-543-0006.

"Economy and broad-spectrum action will make this one of your most powerful weapons against turf disease."

Joe Bell, Scotts Research project leader (Turfgrass Fungicide R&D), talks about new **Fertilizer Plus Fungicide VIII.**

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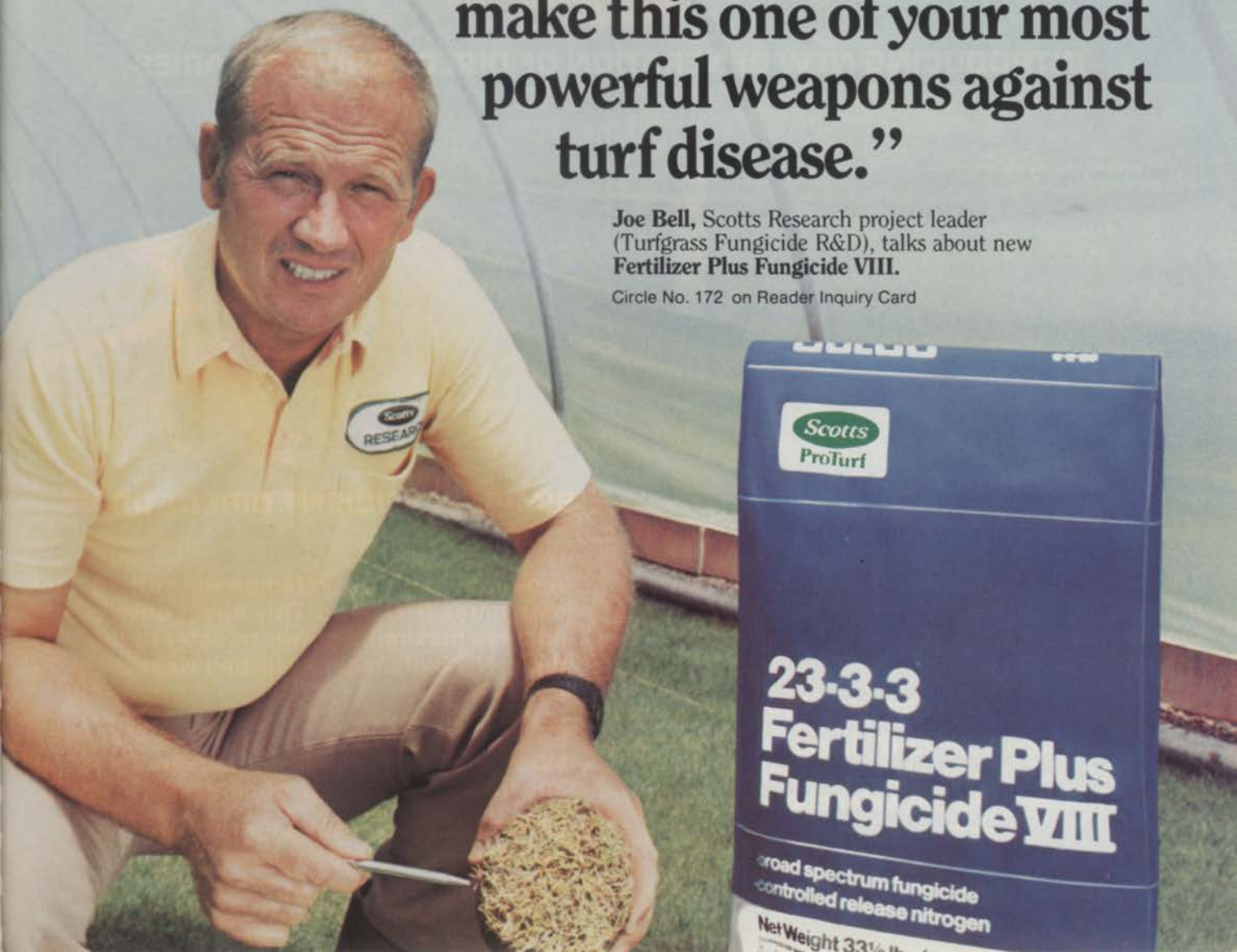

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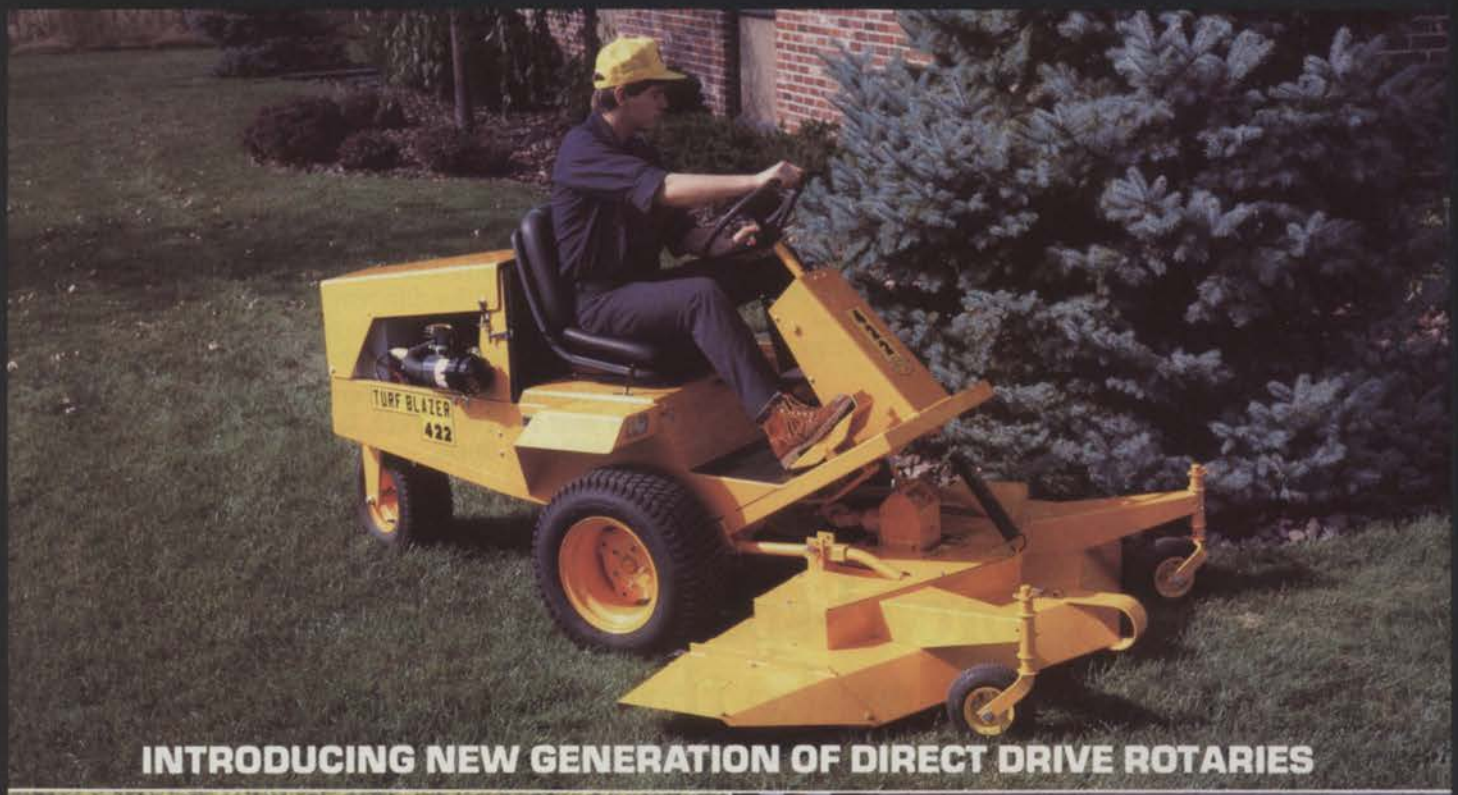

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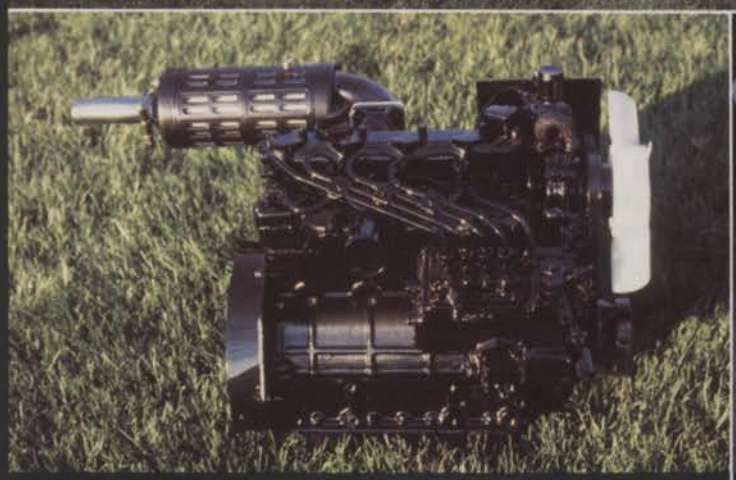

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PIONEERING PROFESSIONAL

Two words characterize George Thompson: 'pioneer' and 'professional.' He's not afraid to try something new, but whatever it is, it reflects positively on his golf course.

By Hal LeSieur

George Thompson, superintendent at the Country Club of North Carolina keeps the course in good shape despite some "testy" holes.

He's a bigger man than he looks. George Bernard Thompson, superintendent at The Country Club of North Carolina, is unassuming in appearance.

Wearing an ordinary cap, this 48-year-old father of four could easily be mistaken for a Scoutmaster leading a weekend camp-out. Yet Thompson is not only a natural leader, but an acknowledged golf course and turf specialist.

"He's always trying for something new, whatever might do a better job on his course," says Jerry Gerard, president of the Mid-Atlantic Association of Golf Course Superintendents. "George emanates professionalism."

That professionalism may result from years around the game. Thompson started golf as a 10-year old caddy, in western Massachusetts, when he was "no larger than the golf bag."

There, his grandfather reigned as the top horticulturist at such estates as the Firestone and Reynolds families. His uncle worked for the National Park Service for 35 years. His aunt was a landscaping authority.

When George Thompson accepted his promotion to the 36 holes of The Country Club, he became responsible for maintaining a deceptively beautiful course.

A testy course

Giving a peaceful exterior appearance—characterized by pines, rolling hills and beautiful lakes—this naturally-elegant course has many testy holes. Many top golfers have played there, including Arnold Palmer, Jack Nicklaus, Gary Player and DeWitt Weaver. Other celebrities who have golfed there include Bing Crosby, Les Brown, Glenn Campbell, Ray Bolger, Andy Williams, Guy Lombardo and Miami Dolphins coach Don Shula.

Thompson has had the duty to prepare the club's Robert Trent Jones course for the prestigious 1985 Southern Amateur and the 1984 Carolina Amateur tournaments. He was an early pioneer, introducing hybrid

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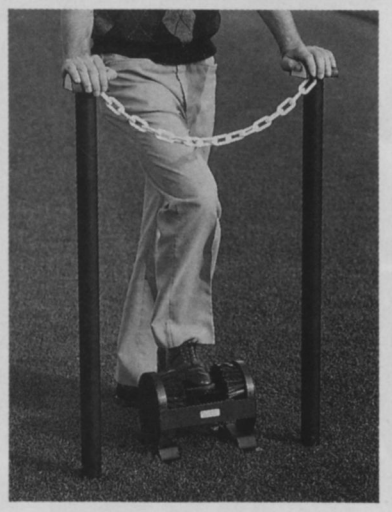

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ryegrass developed by Rutgers and Penn State universities into the Washington area.

The water-surrounded 16th hole displays Thompsons's pride and joy: an attractive laminated yellow pine arch bridge, built by Thompson, his staff, his former boss—and two cranes.

The course is noted for its canopy of dogwoods, rhododendrons, hollies, magnolias and cedars under long-needle pines.

The Bard

Thompson is also a writer, as revealed by his latest paper "A Yankee's Perspective on Overseeding." Thompson addressed the 25th Virginia Turfgrass Conference last year, revealing how his perspective on overseeding has changed dramatically since moving 250 miles south, from Maryland to North Carolina.

"I couldn't wait to seed into fairways in late August when I worked in Maryland, because the rye was the answer to a good many of our fairway problems in the transition zone," he says now.

Good competition

New rye competes with poa annua in the fall, he says, masking spring dead spot, and persisting well into the summer, especially with chemical treatment to control fungus, insects and weeds.

But "the summer problems can be devastating further south."

So now Thompson, like other superintendents who manage golf courses from Virginia Beach south through the Coastal Plain and Piedmont sections, has almost exclusively bermudagrass fairways.

Rye is only a cosmetic over tight-knit hybrid bermuda, and playing characteristics are seldom good. Dormant bermuda makes an "excellent playing surface which golfers can learn to like and even prefer," Thompson explains.

He admits that some Northerners are happy only when playing off green grass, regardless of season. "Most North Carolinians don't mind, even though our bermuda goes dormant until the third week of April.

"I could probably do intense fairway management here, if cost were no object, but I tend to try and work with Mother Nature."

By this Thompson means that if it doesn't rain for a month, he expects a high fairway crown to turn "a little brown" until it rains again.

Still, he was delighted finally to get two inches of rain in May 1986, after a two-month drought with six to eight inches below normal rainfall for the year to that date.

"I'm not as relaxed as the Scottish greenkeepers are about turf," explains Thompson. "In Scotland, they don't even have fairway irrigation. If it doesn't rain all the fairways go dormant and turn brown and no one seems to worry about it."

Thompson's ultimate goal (in North Carolina) is not to overseed any fairways. "This may never happen, but we hope it does," he concludes.

George Thompson is noted for his concern for fledgling superintendents from his alma mater, Stockbridge School of Agriculture. Every year for 23 years, Thompson has taken an additional placement student under his wing for an intense five-month internship.

Turf for life

Thompson lost his father, a mechanic, when only 15 years old, but not before he learned to appreciate mechanical equipment.

Thompson graduated from the first turf school in the United States, the University of Massachusetts. To this he has added the C.G.C.S. certification and state licenses as a ground and aquatic pesticide applicator.

He held the president's job for both the Greater Washington Association of Golf Course Superintendents in 1971 and the Mid-Atlantic Association in 1972.

Although too pressed since his arrival in Pinehurst, N.C. to do much more for his industry, Thompson has also been an officer in both the Maryland Turfgrass Council and the Turfgrass Council of North Carolina. As if all this were not enough, he was named Mid-Atlantic Superintendent of the Year.

Like so many other superintendents, Thompson is a frustrated golfer. "I'm not playing much, although I love golf and should play once in awhile."

Feeling that he owes his employer and members an intimate knowledge of the club's turf, which playing golf enhances, Thompson admits that he still feels guilty when out on the course. "But you don't relax on your own course," he says.

In his final remarks to the 25th Virginia Turgrass Conference, Thompson offered this prophetic bit of advice: "Every golf course is unique and it takes a unique superintendent to interpret members' philosophies, ideals and objectives. You are the person who must produce the end product with the amount of dollars allocated and translate all of it into a pleasurable golfing experience." **WT&T**

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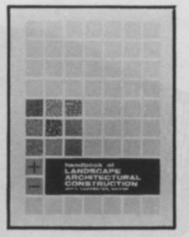

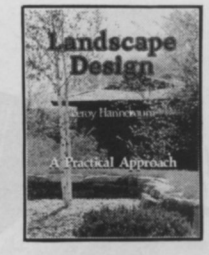

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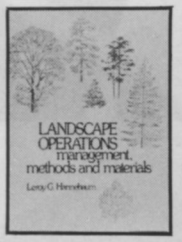

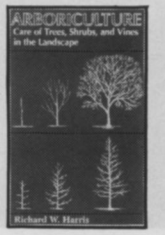

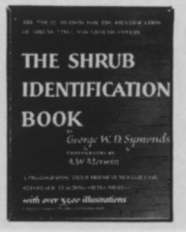

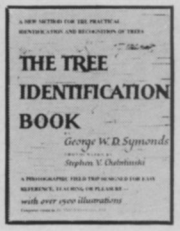

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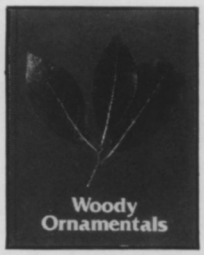

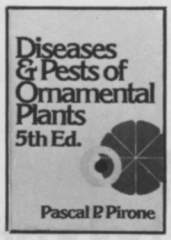

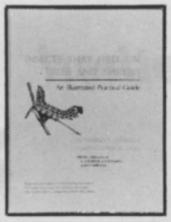

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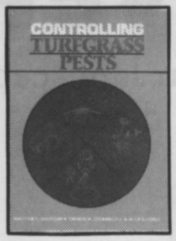

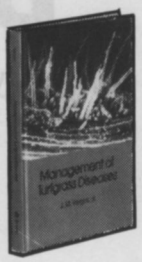

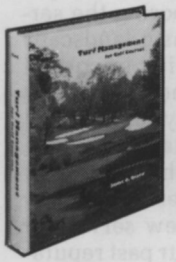

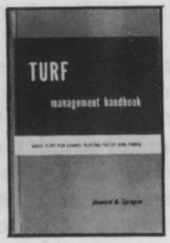

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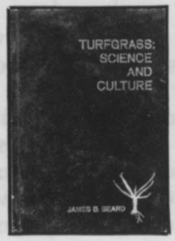

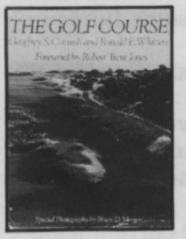

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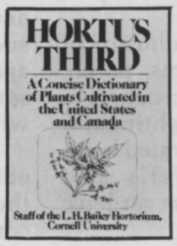

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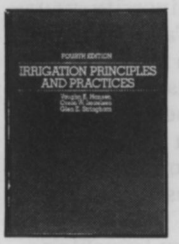

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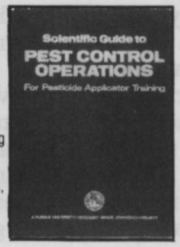

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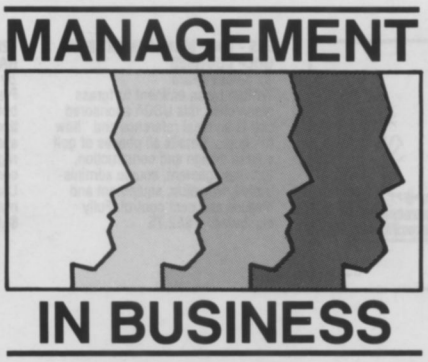
DIVERSIFIED SERVICES

Does your landscape contracting company need more revenue? Before you decide to diversify your business, consider these points.

by Rudd McGary and Ed Wandtke



The landscape contractor's desire to find more capital often results in a wide range of additional revenue-generating options. Four issues need to be addressed before you undertake a new business venture.

1. Define the target customers to whom you have been most successful in offering your services. In order to do this, you will need to answer the following questions: "Where has your company gained its reputation in the market?", and "What is your competitive position in the market?"

By knowing the segment of the market in which you have been successful, you can better decide what additional diversification will complement your current position.

2. What technical and business skills does your company possess? You should assess both the management and employees that you have on the payroll full time. Identify specific skills and voids in the company.

3. What equipment do you currently have and how much is it utilized? Is the equipment more suited for residential or commercial work?

Many companies acquire equipment unique to specific jobs and then forget they have it. Some firms don't even keep inventory records of this equipment and thus have to repeatedly purchase new equipment each time a job calls for its use.

4. Where is the market opportunity most likely to be over the next five years? This can have a geographical answer or be answered by determining the type of services or products that your customers will be most likely to purchase from another firm with your expertise.

The answers to these questions will help you define where your strengths and opportunities are. This will guide you in determining if you should direct your additional services toward residential or commercial customers. (Although the direction may not be overwhelmingly clear.)

Be willing to make some decisions based on less-than-complete information.

Selecting services

Now that you have some directional ideas, the next action is to select the services to market. The targeted customers will be essential. Research done by AGMA in the fall of 1986 indicated that landscape services were not purchased based on advertising, but rather they were chosen because of reputation and referral.

You can market a diversified mix of additional services and products with a high degree of credibility as landscape contractors.

The most frequently-chosen of these are irrigation systems; porch, deck and retaining walls; concrete and brick patio additions; lighting systems integrated into a renovated landscape; natural waterfalls and fountains; gazebos; Japanese gardens; arbors and fences.

While this list is not endless, it does identify some of the problems most landscape contractors face when a potential customer asks, "What type of work do you do?"

If you respond generally that you do everything, how can a customer really feel comfortable that you can handle the project? It's much wiser to indicate that your firm focuses on residential, commercial, or industrial landscape services.

Consumers are not comfortable buying from a company that does not know where its distinctive competence really lies. In choosing the services to add to your basic landscape construction business, it's important to determine whether the new service is complementary to your current business or supplementary.

Do consumers see the service or product as a natural extension of your expertise or will the new service or product not build on your past reputation? In addition you should consider the profit impact of the new diversification.

Plan for more

Most companies assume that their new venture when added to an existing business will automatically start off profitably. Nothing is farther from reality. In addition, if you assume the new venture will only take a little additional time, you will be unpleasantly surprised how demanding the new venture is.

The capital needed to launch the venture will generally be more than was planned, so keep some funds in reserve.

Finally, if you personally do not have people trained in the technical expertise for the new venture in the company, get them at the outset. Bring the new person in to lead the venture and pay the person to see that it is successful. Don't dilute current management unless you have excess personnel, or else your current business will suffer.

In conclusion, it should be apparent to most landscape contractors that the opportunities to diversify your company are endless. Taking time to plan the action, having a map to check the performance against, recruiting technically competent personnel, and knowing the market you intend to sell to all are necessary before the diversification will be successful at most companies.

Often overlooked when launching a diversification is the fact that your current and past customers are the greatest marketing base you have for your company. Select your new venture with the knowledge that you will use this asset to grow your new service. **WT&T**

Wandtke and McGary are senior consultants with All-Green Management Associates in Columbus, Ohio. Dr. McGary focuses on marketing and management issues. Wandtke focuses on operations and financial questions.

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Getting a lock on lawn edging

to do a fair amount of work to prepare for edging installation. But a versatile new edging product developed by the plastics division of Eberhart Steel Products Corp., could take much of that hassle out of installation.

The product, called Edge Lock, is an interlocking system that eliminates the need for stakes and can be installed by one person.

The system requires no trenches or connectors and can be bent to form a square seven inches in diameter. According to the company, Edge Lock can form a circle 14 inches in diameter without bending because the interlocking pieces swivel.

Plastics division head Larry Eberhart says the product "is absolutely revolutionary as far as edging is concerned. There's really nothing this product will not do."

Forty interlocking pieces connect to make a 20-foot section, but come in a box as small as 11x5x7 inches. Each interlocking piece is $6^1/_2$ inches wide and comes in heights of $4^3/_4$, $5^3/_4$ and $6^3/_4$. Using varied sizes, Edge Lock can be stacked so as to form a barrier of just about any specified height. Since it is available in black, ivory or green, the system also can be used to add color to landscape designs.

Edge Lock, constructed of polyvinyl chloride (PVC), is designed with a "bulb" on one end and a hollow "C" on the other (see figure A). Installation is as simple as sliding the hollow "C" of one piece over the bulb of another and tapping it into the soil (see figure B). A rubber mallet is recommended because a metal hammer may damage the edging. Each piece is .10 inches wide at the wall, .281 inches wide at the bulb.

Because the product is constructed of the PVC, a relatively expensive plastic, Eberhart doesn't expect an immediate profit from Edge Lock's sale. But because of the company's size, he explains, "We have the staying power and stability to wait five years."

Edge Lock in use.

The company began selling the product last November and has thus far sold on a limited, test basis. People will call up and ask for 100-foot sections for testing, Eberhart says.

He adds that the product, which took six months to develop, is in partial distribution now, but he expects nationwide distribution by the end of the year. "I didn't want distributors at first because of the price structure," Eberhart explains. He found that prices would vary too much from distributor to distributor.

However, associates advised him to look around for distributors who would work in the same price structure. He has found some and is currently working out arrangments with them. He estimates it will take 50 to 60 distributors for an effective national network. The company will market Edge Lock to landscapers only, he adds.

Response to Edge Lock has been overwhelming, Eberhart says. Although distribution will be limited much of this year, he still expects to sell at least three to five million feet of the product in 1987. The division has only recently expanded its production facilities and can now produce 150,000 feet of the product a day.

Eberhart is so confident that his product will do well, he boasts, "We will be the biggest edging manufacturer in the country in two years. I guarantee it."

The company has supported the release of the product by spending an average of $9,000 a month on advertising. The distributors, Eberhart says, like having this kind of support. "We're taking care of our distributors," he adds.

The product is patent pending, and Eberhart doesn't expect to receive the patent for at least another year or two. But, he says, this may work to the company's advantage. "No one will try infringing on our product because no one knows what the patent office will give us."

Early "copies," he says, could lead to patent infringement law suits. After the patent is awarded, other companies will be able to develop products outside of the patent. But for now, Eberhart's plastic division will take advantage of the solo status and lock up as big a market share as possible. **WT&T**

FIGURE A

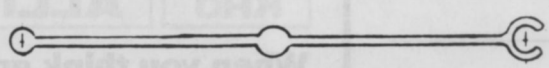
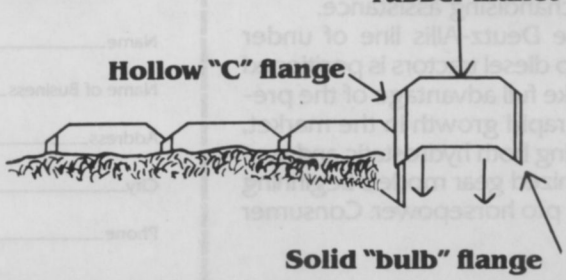


FIGURE B



NOTHING CAN WITHSTAND THE FORCE OF AN IDEA WHOSE TIME HAS COME!

INTRODUCING **EDGE LOCK™** THE NEW SUPERIOR
PLASTIC INTERLOCKING LAWN EDGING SYSTEM. (Patent Pending)

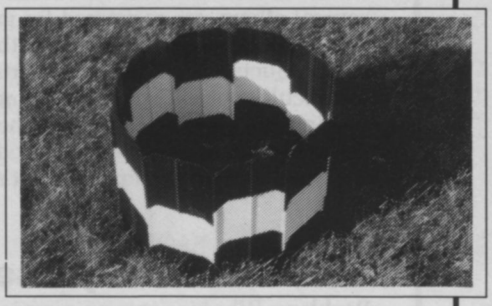
EDGE LOCK™

NO TRENCHES TO DIG!

EDGE LOCK™ is self-trenching. It creates its own trench as it is installed!

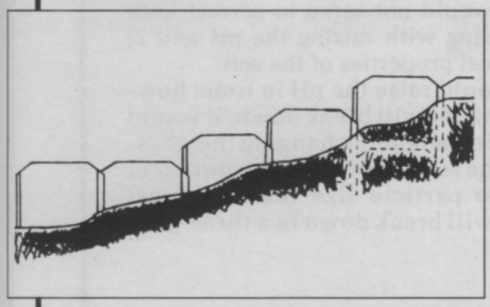
NO STAKES NEEDED!

The stakes are built right in. You drive it directly into the soil with a rubber mallet!



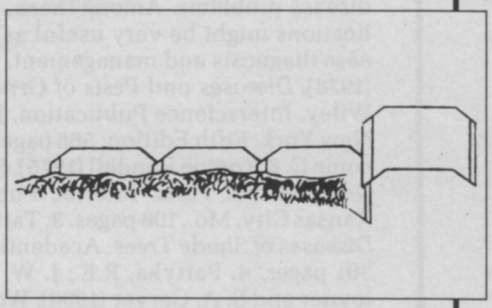
STACK 'EM UP!

That's right…you can stack pieces one on top of the other to suit your needs – around trees or whatever. Build it high or keep it low!



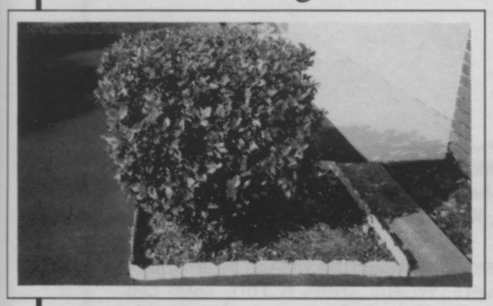
UP HILLS–DOWN HILLS!

Since **EDGE LOCK™** slides together vertically, you can use it like a stair step to negotiate up or down hills easily!



NO CONNECTORS NEEDED!

Each section slides inside the other bonding it together from top to bottom. Each section pivots inside the other so you can go around tight corners with ease. And it won't pull apart!



ON AND ON…AND ON…AND ON…

How about a 20' section in a small box 7" x 11" x 5" that you can carry in your hand? Flat pieces that can be bent *by hand* to make those sharp corners. Three different heights for different soil conditions. Competitive pricing, colors, PVC Construction and more. Want the whole story? Call or write for a free sample and brochure. Tell your distributor to **"PLEASE STOCK EDGE LOCK™"** because nothing else will do. (Patent Pending)

PLASTICS DIVISION/EBERHART STEEL PRODUCTS CORPORATION
417 East Jefferson Blvd., Mishawaka, Indiana 46545-6594, (219) 259-2461

DISTRIBUTORS WANTED

Circle No. 121 on Reader Inquiry Card

PROBLEM SOLVERS

by **Balakrishna Rao,** Ph.D.

Preventing beetle grubs

Problem: *Are preventative measures against beetle grubs effective? If yes, when, what and how much? (New Jersey)*

Solution: Preventative applications of insecticides might be beneficial in some situations where there was a history of a severe grub problem in the past and a severe problem is expected in the current season. The important thing to remember is the timing of the application.

Since most of the current grub control materials on the market vary in their length of residual, the applications should be timed close to the grub activity period. Preferably the materials should be in place when newly-hatched young grubs become active in the late summer or fall. The next best time would be in the early spring, as the mature overwintered grubs come up and begin feeding.

If the materials were applied too early (as a preventative measure), full benefit may not be obtained because of their short residual effect. Insecticides, such as Dursban, diazinon, Proxol, Turcam, Oftanol, Sevin and several others, are registered for grub control. The results may vary depending upon the turf environment and products used. Based on reports and experiences, it is difficult to predict the effectiveness of a product. Regarding the question concerning how much to use, use the rate recommended on the product label. Read and follow label specifications for best results.

Books to identify diseases

Problem: *What in your opinion is the ideal reference book and easiest to use to diagnose ornamental flower/tree/shrub diseases? (California)*

Solution: There are a number of books, publications and fact sheets which deal with ornamental plant disease problems. Among these, the following publications might be very useful as references for disease diagnosis and management. 1. Pirone, Pascal P. (1978), *Diseases and Pests of Ornamental Plants.* A. Wiley, Interscience Publication, John Wiley & Sons, New York, Fifth Edition: 566 pages. 2. Shurtleff, Malcome C. & Roscoe Randell (1975), *How to Control Tree Diseases and Pests.* Intertec Publishing Company, Kansas City, Mo., 106 pages. 3. Tatter, Terry A. (1978), *Diseases of Shade Trees.* Academic Press, New York, 361 pages. 4. Partyka, R.E.; J. W. Rimelspach, B. G. Joyner and S. A. Carver (1980), *Woody Ornamentals: Plants and Problems.* Hammer Graphics, Inc., 427 pages.

Storing chemicals

Problem: *How long can herbicides, pesticides, etc. be stored without losing their effectiveness? (Arkansas)*

Solution: If stored according to manufacturer's guidelines and label specifications, most pesticides we use today have a shelf life of two to three years. Shelf life or half life of the herbicides and pesticides can vary depending upon the storage conditions and the temperatures they are exposed to.

Most pesticides should remain effective as long as the containers are stored properly and are not opened. Pesticides which are two or more years old may not be as effective as the new ones, or they may even be phytotoxic as they get older. Check with your supplier or the manufacturer for further details.

Football fields and lime

Problem: *Regarding the question in the June 1986 issue on Football Fields and Lime, we have a limestone quarry and make many granular, sand and chip-size products. When I read your recommendation that sand be applied after coring, my thought was that a limestone sand would serve two purposes. Is there a double benefit in using a limestone sand after coring on an athletic field? (New York)*

Solution: I believe that the limestone sand product you are referring to is calcium carbonate and the sand is the size designation. The answer to your question would be no, because with the limestone sand you have, it would not serve to correct both problems of 1) dealing with raising the pH and 2) changing the physical properties of the soil.

This product would raise the pH in time; however, since the particles will break down, it would be difficult to obtain benefit in changing the physical properties of the soil. We have used sources of lime having larger particle size than a typical sand particle that will break down in a three-year period.

Balakrishna Rao is Director of Lawn Care Technical Resources for The Davey Tree Co., Kent, Ohio.

Questions should be mailed to Problem Solvers, Weeds Trees & Turf, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2-3 months for an answer to appear in the magazine.

Team prevents your weeds with all-season stamina. It's gentle on cool season turf grass, including bluegrass, ryegrass, bentgrass and other fairway grass species. And Team pre-emergence herbicide consistently delivers better control, longer control for your crabgrass and goosegrass.

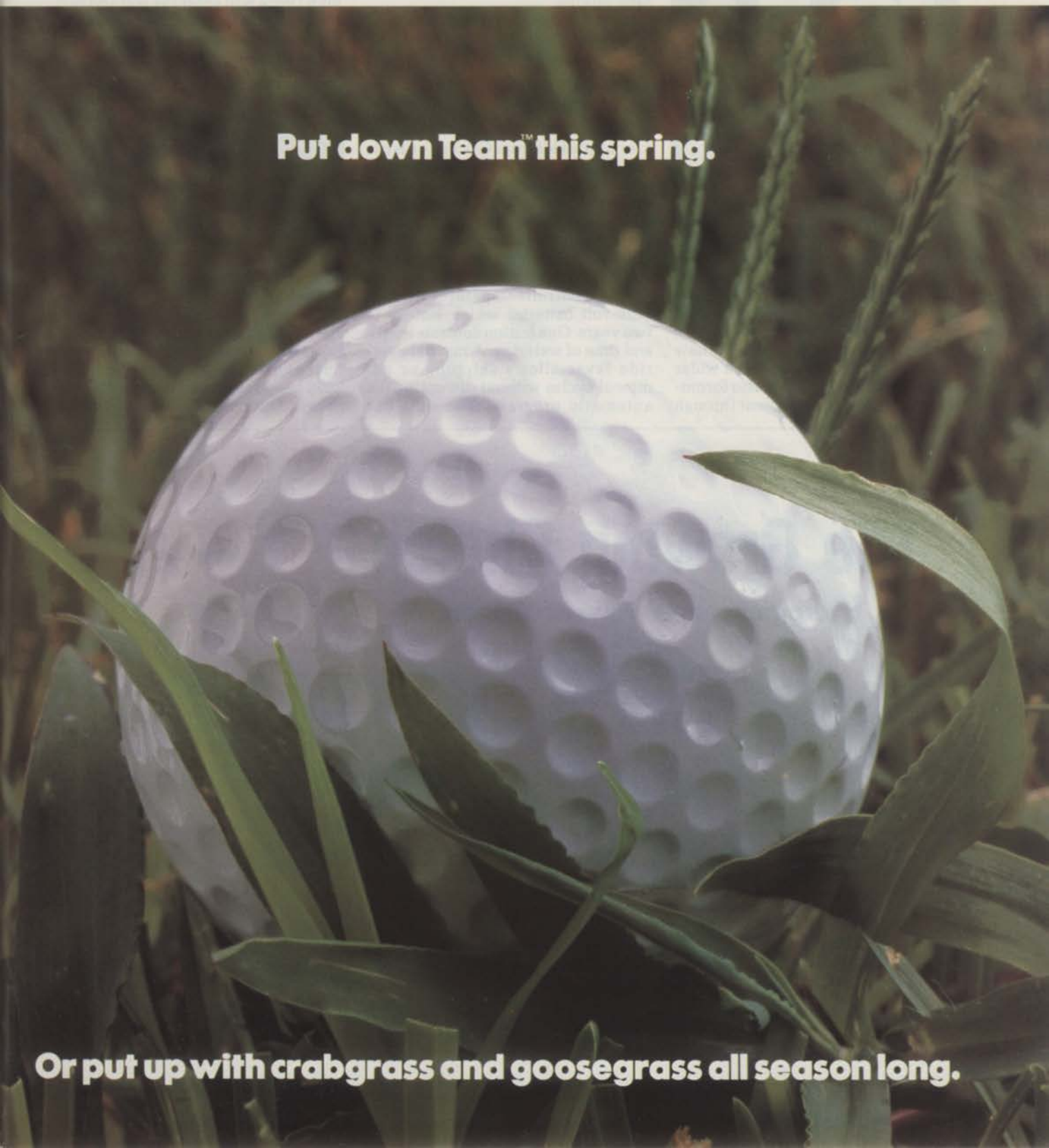
Team spreads very easily. The clay carrier makes equipment calibration simpler and application more accurate. It also reduces dust problems.

Call time-out on crabgrass and goosegrass on your turf, for all season. With Team.

Talk to your Elanco distributor soon. Or call toll-free: 1-800-ELANPRO. In Indiana, call collect: 317-261-6102.

Elanco Products Company
A Division of Eli Lilly and Company
Lilly Corporate Center
Dept. E-455, Indianapolis, IN 46285, U.S.A.
Team™—(benefin + trifluralin, Elanco Products Company)
Refer to the Team label for proper application instructions.

Circle No. 123 on Reader Inquiry Card



Herbicide line expanded to meet special needs

Dow Chemical has expanded its line of Turflon herbicides with a variety of formualtions designed to meet special

needs of lawn care operators. The new products are effective against a wider range of weeds. Turflon is also formulated to minimize movement through soil and root uptake by off-target vegetation such as ornamentals.

The line includes Turflon II Amine, a pre-mix, broadcast herbicide in an activated amine base; Turflon Amine, developed for tank mixing; Turflon D, a pre-mixed, low volatile ester herbicide; and Turflon Ester, ester-based and designed for tank mixing.

Circle No. 190 on Reader Inquiry Card

Sprinkler control kit converts most valves

A battery powered automatic sprinkler control kit from Galcon is easy to install and requires no digging or wires. The system automates existing manual systems, turning sprinklers on and off automatically. Kits include parts to convert Champion, Richdel, Orbit and Rainbird (plastic) 3/4-inch and one-inch manual valves.

The controller operates on two nine-volt batteries which last up to two years. One button controls length and time of watering. A manual override lever allows skipping or additonal cycles without disrupting the automatic program. The unit has built-in flow control and operates from 30 to 150 psi. Each kit retails for under $30.

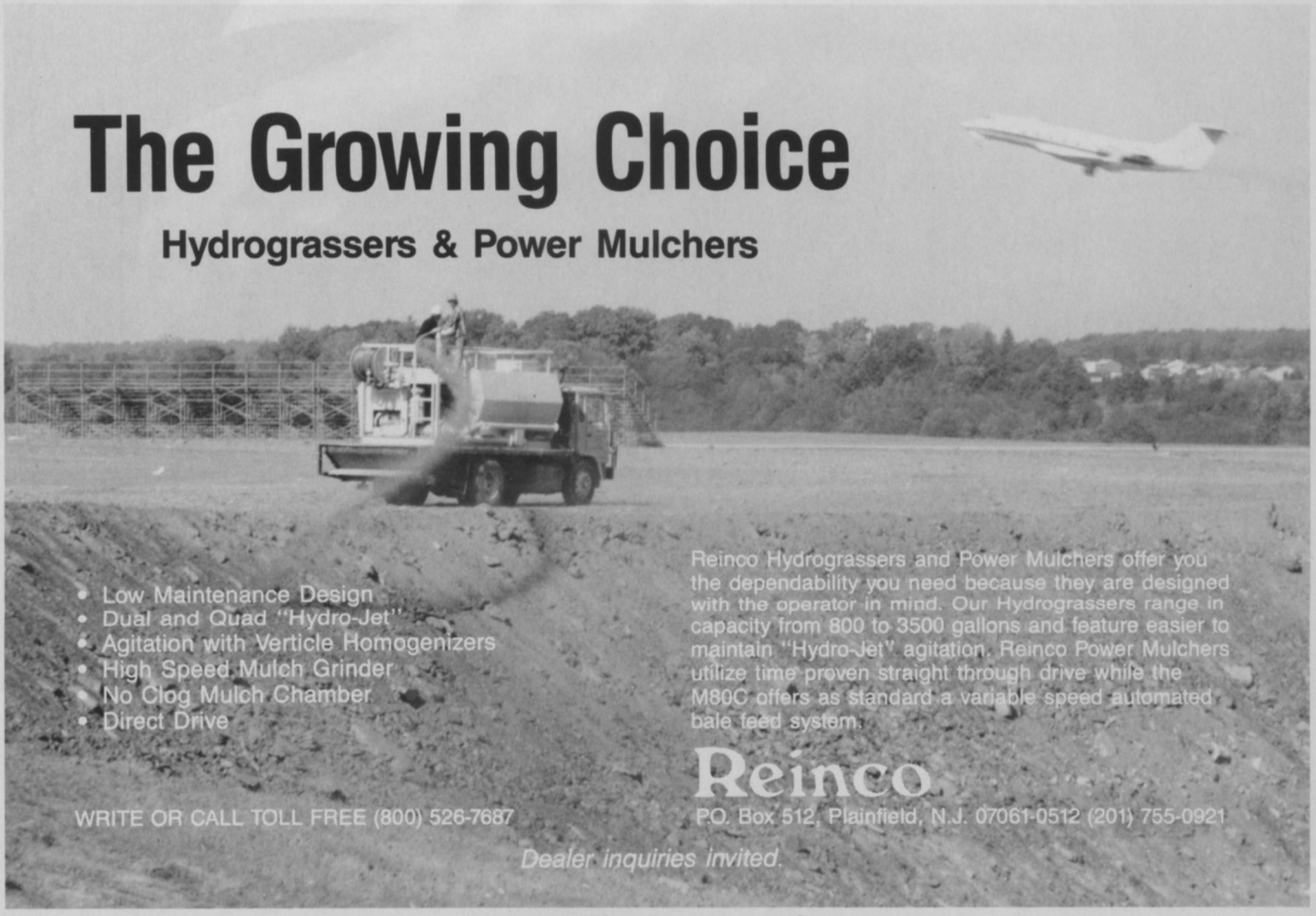
Circle No. 191 on Reader Inquiry Card

Aerifiers mark entry into turf market

John Deere will enter the golf and turf equipment market with a new line of five aerifier models. Shatter aerifiers are available in two widths: the 260S

with a 60-inch width, and the 280S with an 80-inch path.

Both are mounted on a category I or II three-point hitch and include storage stand and weight tray. The 260S has 24 6½-inch induction-hardened tines and two 4 x 28-inch rollers. The 280S has 36 tines and two 4 x 41-inch rollers. Optional four-inch tines are



Circle No. 189 on Reader Inquiry Card

The long and the short of high-capacity rotary mowing.

The HR-15. Long on mowing. Short on costs.

With a massive 188 inch cutting swath, the HR-15 takes long, powerful strides over all types of terrain. So it can chop the most demanding mowing schedules down to a money-saving size.

Equipped with rotary or flail decks.

Based on the time-proven reliability of the Jacobsen F-Series Tractor, this rugged, self-contained mowing unit is designed for long hours of dependable service. With your choice of decks: rotary or our unique new fine-cut flail.

The HR-15 is also available with "fine-cut" flail decks. Jacobsen exclusives for a superb quality cut.

Three interchangeable rotary decks—each with its own hydraulic control — are constructed of heavy gauge steel for long life under the toughest conditions. Plus large caster wheels and anti-scalp rollers help give you a super-smooth, manicured finish over all types of turf. Even over rough terrain.

And Jacobsen's three interchangeable "fine-cut" flail decks provide a smoother, more even cut than any other flail on the market — even in tall grass. The flail's hooded, full-width discharge helps prevent windrowing, and eliminates much of the danger of discharged objects — a big plus when mowing around crowded parks or institutions.

The HR-15 also features a 20-gallon fuel tank, enough for a full day of mowing. And the rugged 78-hp Perkins diesel and radiator are mounted up front, out of the way of clippings and debris, for clean, cool operation.

Plus creature comforts like power steering, conveniently located controls, and the cushioned, shock-absorbing seat with back rest, minimize operator fatigue.

The HR-15 high-capacity mower from Jacobsen. It shortens up the longest mowing jobs. For more information, or to arrange a free demonstration, contact your Jacobsen Distributor. Remember, lease and finance plans are available.

JACOBSEN
TEXTRON
Jacobsen Division of Textron Inc.

Circle No. 257 on Reader Inquiry Card

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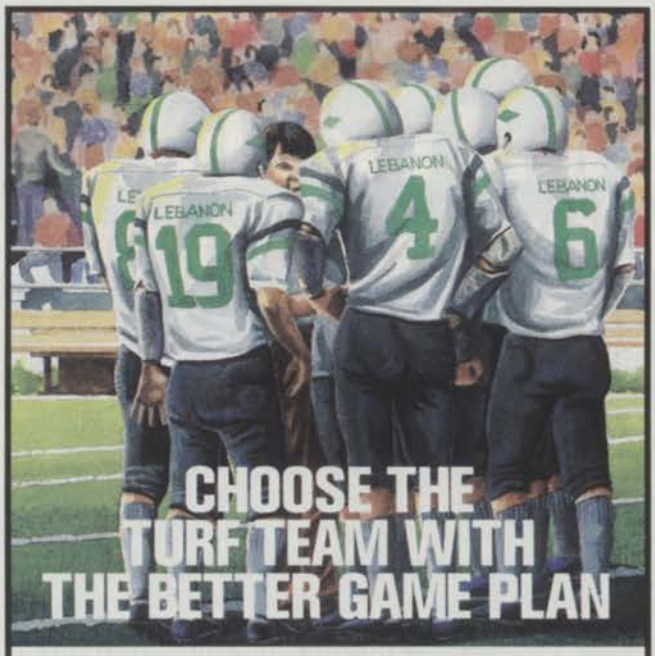

LEBANON PREMIUM FERTILIZERS AND TEAM™ CRABGRASS PREVENTER... AN ALL-STAR TEAM YOU CAN WIN WITH EVERYTIME

Lebanon premium fertilizers with Team™ have the defensive strength of benefin and trifluralin, yet they're gentle on your turf. The combination of these proven herbicides kills the seeds of annual bluegrass, smooth and hairy crabgrass, goosegrass, as well as green and yellow foxtail—as they germinate. And our premium quality fertilizers strengthen Northern or Southern turfgrasses.

Pick the right team for you.

You can select the winning Team™ combination that meets your game plan. Choose from our standard line-up, such as **Lebanon Country Club 19-4-6 with Team™ Crabgrass Preventer,** or give us your preferred fertilizer analysis and we will custom blend it with Team™ for you.

Together, one application of **Lebanon** fertilizer with Team™ will give you a winning season against crabgrass and other annual weeds.

For more information on **Lebanon** premium fertilizers with Team™, call our **Greenline** today at 1-800-233-0628, in Pennsylvania, call 717-273-1687. And start getting help with your game plan against crabgrass and goosegrass . . . from the ground up.

Lebanon
TOTAL TURF CARE
A division of Lebanon Chemical Corporation
P.O. Box 180 • Lebanon, PA 17042

Team™ and Diagonal Color Bar are the registered trademarks for Elanco Products Company's combination of benefin and trifluralin.

Circle No. 138 on Reader Inquiry Card

available on both units.

The tines are slightly twisted to shatter the soil in three directions at high speed, allowing the soil to heal quickly, the company says.

The Model 132 aerifier is a pull-behind; the 232 is mounted on a category 0 or I three-point hitch. Both have 32-inch working widths, six 18-inch diameter disks and 60 3/4-inch open spoons, slicer blades and disk weights.

The model 270 is mounted on a category I three-point hitch and has a 72-inch width. It has 14 18-inch diameter disks, 140 closed spoons and a weight tray.

Circle No. 192 on Reader Inquiry Card

Double roller available in pull-behind or hitch

A new line of double roller rock rakes from Harley Rock Windrowers and Pickers is available with either pull-behind or three-point hitch attachments in three different sizes: for large open fields, park and recreation

projects, down to commercial and residential landscaping.

The double roller allows the moving of windrows several times while cleaning and leveling. The windrower is a companion piece to the Harley Rock Picker and can be used as an accessory to other existing rock picker models.

Circle No. 193 on Reader Inquiry Card

Seed coating combines nutrients and fungicides

Nutri-Kote Plus Apron is the latest advancement in seed coatings from CelPril Industries.

CelPril says that Nutri-Kote Plus Apron controls pythium and other seeding diseases, helps turf establish quicker and promotes more lush green leaf growth.

Nutri-Kote contains an exclusive formula of nitrogen, phosphorus, potassium, sulfur, iron and zinc in the right combinations for various bentgrasses, bermudas, ryes and

One of the strengths of Team™ is its weeks of control. One application puts an end to crabgrass and goosegrass for up to 20 weeks.

The control's not just longer, it's more effective, too. Research by leading universities shows that Team provides outstanding annual grass control all season long while being gentle to all turf species.

That's because of the way Team works. It stays put on cool season turf. Won't leach out, even in heavy rainfall. And once activated, forms a vapor zone that keeps weeds from emerging for up to 20 weeks.

That's Team's most impressive strength. Its weeks of weed control.

See your Elanco distributor. Or call toll-free: 1-800-ELANPRO. In Indiana, call collect: 317-261-6102.

Elanco Products Company
A Division of Eli Lilly and Company
Lilly Corporate Center
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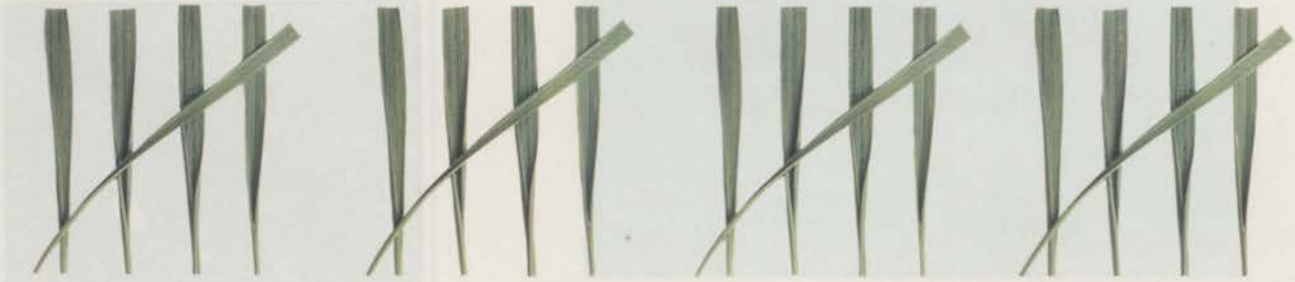
Team™—(benefin+trifluralin, Elanco Products Company)
Refer to the Team label for complete use directions.

There's only one thing more impressive than Team's strengths.

Its weeks.



Circle No. 124 on Reader Inquiry Card

FYLKING
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FYLKING

Remember the name because you're going to hear a lot about it. Fylking Kentucky bluegrass lawn is something special. It forms a dense, thick turf, more disease and drought resistant. Greens up earlier, stays greener longer. Fylking can be cut as low as ¾ inch, even ½ inch for home putting greens. Proven over many years of international certified testing. Ask your seed distributor for Fylking.

Fylking — the World's Fair grass.

FYLKING
KENTUCKY BLUEGRASS
U.S. Plant Patent 2887

Another fine, quality-controlled product of Jacklin Seed Company.

Circle No. 133 on Reader Inquiry Card

fescues.

"Environmentally, it has a value," says Doug Toews of CelPril, "because it puts the nutrient and fungicide where it needs to be. You're not broadcasting the pesticide."

According to CelPril's research, the coated seed growth rate runs three to four days ahead of uncoated seed 30 days after germination. And the survival rate for coated seeds is about 40 percent higher on a seed-to-seed basis.

Circle No. 194 on Reader Inquiry Card

Pruner gains distributor for North American market

The Power Prune 250, manufactured by Innovative Machinery International Ltd., New Zealand, has signed Impex Trading, West Bend, Wis., as its exclusive North American distributor.

The pruning gun weighs about two pounds and can cut up to one-inch green wood. The unit is powered by a lightweight single stroke, single-cylinder, propane motor.

Its light weight and ease of operation help to reduce fatigue.

Circle No. 195 on Reader Inquiry Card

Rotary riding mower gives 54-inch cut

Middlesworth Engineering and Manufacturing has added the Model C54R riding rotary lawn mower to its line. The mower is an out-front variety with a 54-inch cut. It has a lever to adjust cutting heights to between one and four inches.

continued on page 122

"OUR GOLF COURSE HAS TWO PROS. I'M ONE OF THEM. THE OTHER IS OUR WOODS RM 90."

Mr. Tim O'Leary
Member—Wilson Sporting Goods
National Advisory Staff
Part owner, general manager, and pro
Lost Nations Golf Club
Dixon, Illinois

After 15 years at the same golf complex, Mr. O'Leary has come to the conclusion that their two year old Woods RM 90 is, "far superior to any type of mower…including reels. It mows weeds and grass under wet or dry conditions, and the maintenance savings alone paid for the mower in the first year."

If you're in charge of mowing a golf course, park, school, cemetery or industrial site, it would pay you to get to know the Woods RM 90 better. It's 7-1/2 ft. cutting swath cuts the big jobs down to size by mowing up to 4-1/2 acres per hour.

For complete information on the RM 90, contact Woods, Division of Hesston, Dept. PM, Oregon, Illinois 61061.

40
years of
QUALITY
1947-1987

WOODS

Division of Hesston Corporation
Oregon, Illinois 61061
Circle No. 258 on Reader Service Card

The mower is powered by a 16 hp Kohler cast iron engine, and has hydrostatic transmissions with ground speeds up to 6 mph and true zero turning radius.

The machine is designed for operator comfort since the operator does not straddle the engine or framework. A handrail is provided to assist the operator in getting on and off the mower.

Circle No. 196 on Reader Inquiry Card

Trimming mower gets crankshaft warranty

A revolutionary crankshaft protection device developed by Jacobsen has allowed the company to offer a limited two-year crankshaft warranty on its commercial 20-inch walk-behind trimming mowers.

The device uses a stiffener and blade adapter between the crankshaft and the rotary blade to prevent twisting, bending or breakage of the shaft. This extends engine life and maximizes productive cutting time while minimizing repair and replacement costs.

The warranty was announced at the 1987 Golf Course Superintendents

Association trade show.

Circle No. 197 on Reader Inquiry Card

Sod cup sprinkler disappears into turf

Hunter Industries has developed an innovative sprinkler, the Model I-44 Sod Cup, which actually has turf growing on top of it.

The sod cup has a plug of turf about 1½ inches deep which grows actively. When the head is retracted, the turf fills the hole. The I-44 poses no problems with mowers, and covers a wide range of turf.

The PGA West Golf Course at La Quinta, Calif., has had one in operation on the sixth green for a year with no complaints from golfers or PGA tour officials.

Circle No. 198 on Reader Inquiry Card

New collecting system improves lawn mowers

An improved grass collecting system has been developed by Howard Price Turf Equipment for its Turf Blazer 727 and Turf Blazer II mowers. The blower assembly housing is an 18½-inch diameter, two-piece steel bolt-together housing with a four-blade, 18-inch diameter steel impellar. For protection, the blower has a formed steel tube bumper attached to the mowing deck.

The chute is a six-inch diameter, wire-reinforced transparent plastic hose. The hopper support assembly is welded frame steel tubing mounted on the right side of the prime mover and supports two hoppers, which are Rubber Maid trash cans. The hoppers

SDI TURF SPRAYERS

Trouble-Free Turf Maintenance Year Round!

The most advanced spraying devices in turf care that work season after season with trouble free start-ups.

- **Nationwide Service Centers**
- **Non-Corrosive Materials For Long Life**
- **50 to 1,000 Gallon Tanks Available**
- **46 Models to Choose From**

A full line of spray units for Lawn, Turf, Trees and PCO. Send in for free brochure listing all types of units to do the right job for you. Remember, the right equipment goes a long way!

SEND FOR FREE BROCHURE

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And find out why SDI is the fastest growing spraying manufacturer in America!

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Visalia, CA 93278 (209) 651-1306

Cut Maintenance In Half With SDI

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GET THE FEELING THEY KNOW SOMETHING YOU DON'T?

They do. It's their job to know things first and then pass that information on to you fast. Things like new turf management techniques, effective methods of insect and weed control, what really works... and what won't.

LOOK FAMILIAR?

They should. You've seen them often at turf shows, seminars, conventions—wherever industry news is in the making. They're the editorial and sales management team of WEEDS TREES & TURF. Please meet (sitting from left to right) Heide Aungst, Jerry Roche, Ken Kuhajda, (standing from left to right) Dick Gore, Bob Mierow, Ron Kempner, Jon Miducki and Bob Earley.

THERE'S NO GRASS GROWING UNDER THEIR FEET.

They apologize for not always being in when you call, but great stories are found in the field, not in the office. These pros know that the only way to really cover the green industry is to get out and be a part of it. From turf test plots in Oregon to the corridors of our nation's capital, they're following the leads, surveying the markets, and interviewing the landscape professionals who make our industry grow. Then, they use their years of experience to pull it all together, analyze and present it to you in a crisp, easy-to-read and easy-to-use style. That way, you have the information you need to do your job better, faster and more effectively.

The next time you want to know something about the green industry, give them a call. If you can't reach them at the office, don't worry. **They'll reach you** in the pages of WEEDS TREES & TURF.

WEEDS TREES & TURF

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Bowie Industries invented the Hydro-Mulcher.® And whether you specialize in large or small projects, Bowie makes a Hydro-Mulcher that will save you money. The Bowie Victor 800 is ideal for lawn and landscape jobs.

Like all our equipment, the Victor 800 is built Bowie tough for long, trouble-free service. Its 800 gallon tank can easily spread 350 pounds of mulch over 8,000 square feet in one application. The Bowie Victor 800 is equipped with a built-in shredder bar, and uses twin agitators to keep slurry homogeneous. Call or write Bowie today. We make serious equipment for serious landscapers.

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P.O. Box 931, Bowie, Texas 76230
Toll-Free: 1-800-433-0934 ■ In Texas: 1-817-872-2286 ■ Telex: 887844

Circle No. 101 on Reader Inquiry Card

slide out of the support assembly for easy dumping.

Circle No. 199 on Reader Inquiry Card

Dump box makes golf cars versatile

TNT Utility Systems is offering an interchangeable-mount dump box that, using a patent-pending base frame, will fit all major new or used golf cars.

The dump box enables superintendents to convert golf cars into utility vehicles, saving money on investment and depreciation of utility vehicles.

Accessories for the dump box and a rear seat/cargo bed include a beverage unit and rubber bed-mat.

Other products expected soon by the company include a rear seeder, rear spreader, hose/cord reel and a tool/ladder carrier.

Circle No. 200 on Reader Inquiry Card

Metered injector distributes wetting agent

The Precise Positive Metering Unit has been designed by Aquatrols Corporation specifically to inject the company's Aqua-Gro L soil wetting agent

We want to take stroke out of the executive suite.

Having a stroke isn't something you plan. For yourself or for others in the office. But nearly one million Americans each year die of heart disease and stroke. And 200,000 of them die before retirement age.

The American Heart Association is fighting to reduce early death and disability from heart disease and stroke with research, professional and public education, and community service programs.

But more needs to be done.

You can help us find the answers by sending your dollars today to your local Heart Association, listed in your telephone directory.

Put your money where your Heart is.

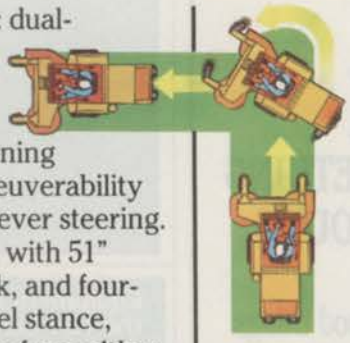
American Heart Association
WE'RE FIGHTING FOR YOUR LIFE

Investment Performance

Hustler's new 251 and 262 deliver commercial-quality mowing at budget prices.

Excel Hustler 251 and 262 make smart equipment investments. They bring efficient mowing without breaking your initial purchase budget.

Agile. Both models have 18 hp engines and productive innovations like: dual-hydrostatic direct-drive, true zero-degree radius turning and the easy maneuverability of one-hand, twin-lever steering.



The Model 251, with 51" rear-discharge deck, and four-wheel stance, trims from either side. An optional 8 bu. rear-mounted BAC-PAC™ catches grass and the deck adjusts in one easy step.

The Model 262 is an out-front mower with 60" 3-way deck (mulch, side or rear discharge) and hydraulic attachment lift. Options like coulter-type edger, 16 bu. BAC-VAC™, 60" dozer blade, V-Blade, utility scoop and cab keep it working year-round.

For an investment in mowing performance, see your Excel Hustler Dealer or, call toll-free for literature or more information.

Model 262

1-800-835-3260
In Kansas 1-316-327-4911

Excel Industries, Inc.
Box 7000
Hesston, KS 67062-2097

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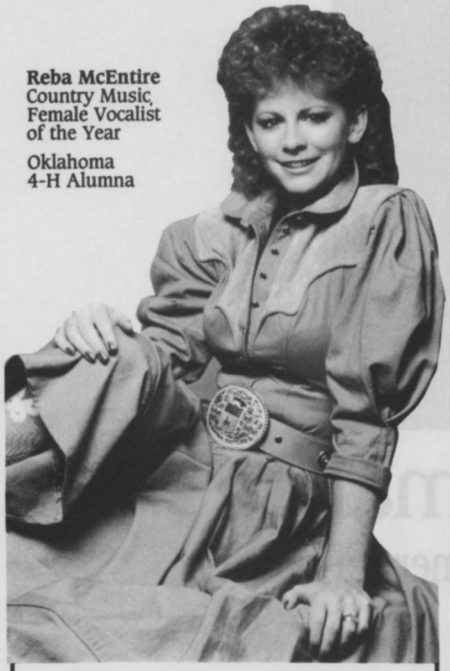
Hustler Tough And Built To Last!

EXCEL HUSTLER
Turf & Grounds Equipment

Model 251	Model 262	Model 275	Model 320	Model 340	Model 400	Model 602D
18 hp, 50"	18 hp, 60"	23 hp, 72"	21.5 hp, 72"	28.5 hp, 72"	34 hp, 72"	32 hp, 72" hillside

Circle No. 128 on Reader Inquiry Card



Reba McEntire
Country Music
Female Vocalist
of the Year

Oklahoma
4-H Alumna

"4-H IS STILL SOMETHING TO SING ABOUT."

"4-H really did good things for me. It taught me skills that helped me gain a sense of responsibility. And it was fun! I used to sing in the 4-H Share the Fun Festivals. Getting on stage and singing before groups of people helped me gain self-confidence. It was so exciting."

JOIN TODAY

CONTACT YOUR COUNTY EXTENSION OFFICE

directly into irrigation lines.

The unit, a totally enclosed electrical pump, is fast, safe and economical, and is designed for constant duty handling heavy liquids. The unit is fully warranted.

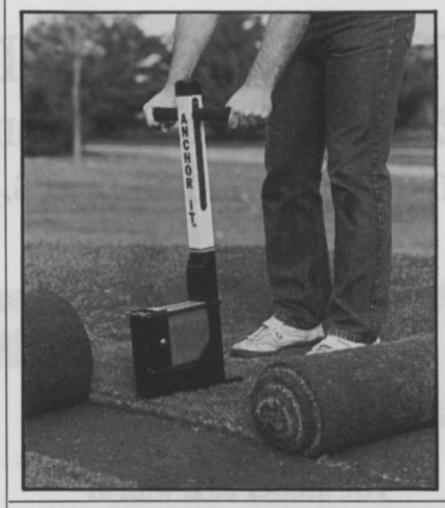
Circle No. 201 on Reader Inquiry Card

Large staple gun anchors turf, sod

Anchor It from the Standard Golf Company is a fast way to to keep sod and turf covers in place. The machine works like a staple gun: by pressing down on a spring-loaded handle, a six-inch staple is driven into the ground.

It is constructed of lightweight cast aluminum, with foam-cushioned handles for added comfort. Anchor It holds up to 50 staples at a time, and has a refilling unit for fast replacement.

Circle No. 202 on Reader Inquiry Card



Erosion fabric useful for seedbed establishment

Hold/Gro is an erosion control fabric used for seedbed establishment on critical slopes and as a stabilization fabric where ground cover plantings are to be used.

Hold/Gro features paper strips in a knitted mesh support fabric. Sprigs of young plants are inserted through the material. The fabric provides soil protection and conserves moisture needed for root establishment. The fabric is bio- and photo-degradable and will disappear after plantings take hold.

Circle No. 203 on Reader Inquiry Card

Equipment for the Turf Care Professional

Olathe TREE AND BRUSH CLIPPER

SETTING NEW STANDARDS FOR CHIPPERS

- Hydrostatic drive on feed for instant speed & directional control
- Fold up feed apron now standard for safety & transport
- Hinged top housing for easy blade access
- Discharge chute rotates 360° & horizontally — no wrenches required
- Infeed 15° closer to curbside for operators safety
- New, more powerful feed motors
- 42" diameter cutter drum for power

OLATHE MANUFACTURING, INC.
100 INDUSTRIAL PARKWAY, INDUSTRIAL AIRPORT, KANSAS 66031

800-255-6438
913-782-4396

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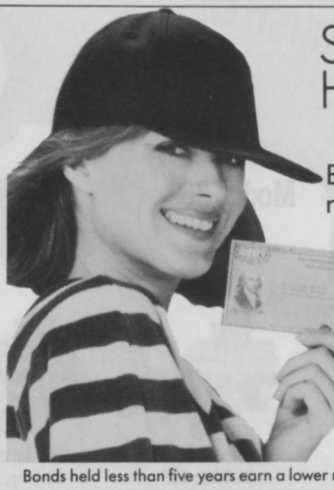


SMART WOMEN KNOW HOW TO MAKE MONEY.

It's easy, with U.S. Savings Bonds. Today's Bonds earn competitive, market-based interest rates—like money market accounts. Plus, there's a guaranteed minimum return and big tax advantages. For more information, call 1-800-US-BONDS.

U.S. SAVINGS BONDS

Bonds held less than five years earn a lower rate than the guaranteed minimum. A public service of this publication.

FOR GENERATIONS CANCER PLAGUED THIS FAMILY. THEN WE CAME INTO THE PICTURE.

It's a tragic coincidence that cancer has taken so many members of this family over the years.

It took Frank Domato in 1961. Patricia O'Hara Brown in 1974. And Serafino Gentile in 1982.

But the fact that the chain of tragedies has now been broken is no coincidence at all.

Over the last 40 years, research programs supported by the American Cancer Society have made increasing progress in the treatment, detection and prevention of cancer.

In 1985 alone, the Society funded over 700 projects conducted by the most distinguished scientists and research institutions in the country.

So it's no coincidence that in 1986, cancer did *not* take Debra Gentile—Frank Domato's great-granddaughter. Just as it didn't take hundreds of thousands of others who have been successfully treated for the disease.

You see, we are winning.

But we need you to help keep it that way.

AMERICAN CANCER SOCIETY

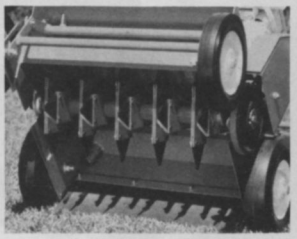
Help us keep winning.

Created as a public service by Ally Gargano/MCA Advertising LTD.

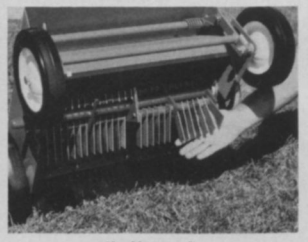
Get the thatch out before you fertilize

Don't fertilize the thatch

Turf experts agree that, after a hard winter, excessive thatch must be removed in order to have a healthy turf in the spring and summer. Nutrients are merely absorbed into the **thatch** and don't reach down into the **roots** if the thatch build-up is not removed.



knife reel



flail reel

BlueBird Lawn Combers are the largest selling and most customer-accepted power rakes for removing thatch — worldwide. With a BlueBird model for every type of lawn, and spacings for every application, it's no wonder BlueBird is Number One. Interchangeable **flail reels** and **knife reels** are available in BlueBirds for vertical mowing, and together they answer every need of lawn service professionals in all parts of the country.

F-20 F20B, 400 Catcher model Towable model

Call your distributor today for a BlueBird catalog. Take advantage of the whole BlueBird line — all **professional** models because they're the **best built** power rakes in the industry. For the name of your distributor call the BlueBird Action Center, 2778 South Tejon, Englewood, colorado 80110. Phone (303) 781-4458. Today!

BlueBird International®

master charge

Circle No. 104 on Reader Inquiry Card

EVENTS

MARCH

Canadian Turfgrass Conference, March 8-11, Saint John Trade & Convention Center, St. John, N.B. CANADA. Contact: Mary Gurney, CGSA, 698 Weston Rd., Suite 32, Toronto, Ontario M6N 3R3. (416) 249-7304.

Nassu/Suffolk Landscape Gardeners Association Professional Turf & Plant Conference, March 11, Nassau Veterns Memorial Coliseum, N.Y. Contact: Walter Austin, 20 Rubin Hill Place, Brentwood, NY 11717; (516) 231-9840.

Trees for Nebraska Conference, March 13-14,University of Nebraska, Lincoln, Neb. Contact: Dave Mooter, Douglas County Extension Office, 8015 W. Center Rd., Omaha, NE 68124; (402) 444-7804.

Reinders Turf Conference, March 18-19,Waukesha County Expo Center, Wisc. Contact: Ed Devinger, 13400 Watertown Plank Rd., Elm Grove, WI 53122; 84149 786-3300.

Missouri Park & Recreation Association Annual Conference, March 25-27, Tan-Tar-A Resort, Lake Ozark, Mo. Contact: David Ostlund, MPRA, 1203 Missouri Blvd., Jefferson City, MO 65101; (314) 636-3828.

APRIL

Menninger Flowering Tree Conference & Southern Tree Workshop, April 5-9, Quality Inn, Cypress Gardens, Fla. Contact: Jack Siebenthaler, P.O. Box 6524, Clearwater, FL 33518; (813) 446-3356.

New York State Recreation and Park Society's 47th Annual Conference And Exhibition, April 5-8, Kutsher's Country Club, Monticello, N.Y. Contact: Arthur Ambuhl, NYSRPS, 119 Washington Ave., Albany, NY 12210; (518) 463-1232.

South Florida & Carribean Landscape Trade Show, April 10-11, Miami Expo Center, Miami, Fla. Contact: Charlye Roberts, 19160 N. Krome Ave., Miami, FL 331887; (305) 235-2035.

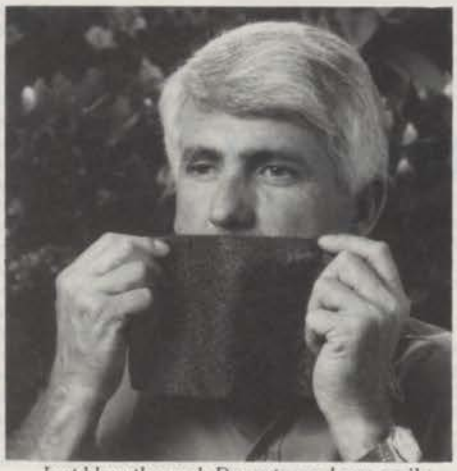
Southeastern Turfgrass Conference, April 13-14, Tifton, Ga. Contact: Dr. Glenn Burton, Dept. of Agronomy, Coastal Plain Experiment Station, Tifton, GA 31793; (912) 386-3353.

Annual Turf and Landscape Institute, April 27-29, Anaheim Convention Center, Anaheim, Calif. Contact: Ed McNeill, 2492 E. Mountain St., Pasadena, CA 91104-9965; (818) 798-1715.

To insure that your event is included, please forward it, 90 days in advance, to: *WEEDS TREES & TURF* Events, 7500 Old Oak Boulevard, Cleveland, OH 41130.

THIS TEST WON'T HOLD WATER —OR AIR.

Water passes easily through highly permeable Duon Weed Control Mat.



Just blow through Duon to see how easily air passes through it.

The proof is stronger, longer lasting plants with DUON® Weed Control Mat.

Both water and air pass easily through Duon Weed Control Mat, made of Phillips Fibers nonwoven polypropylene. As a landscaper, you know how important that is to a plant's root system and to the future well-being of your big landscape jobs—especially those you use as references.

When water and air can't get through, plants die. Black plastic won't work for the long-term. And woven polypropylenes are nowhere near as permeable as nonwovens. For example, the air permeability for nonwoven Duon is about 14 times greater than for woven polypropylenes and the water permeability for Duon is about 10 times greater.

Put our words to the test. Hold Duon under running water, then take another piece and breathe through it. Then try the same test with a competitive weed control mat.

When covered from sunlight, Duon is virtually permanent. It allows plants to thrive and impedes about 95% of weed growth (in most areas). It also keeps mulch from going down into the soil.

For your quality landscape jobs, order Duon. For further information, call Phillips Fibers (803) 242-6600.

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Bridgeview, IL 60455
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CLASSIFIEDS

RATES: $1.00 per word (minimum charge, $25). Bold face words or words in all capital letters charged at $1.25 per word. Boxed or display ads: $85 per column inch-1x (one inch minimum); $80-3x; $75-6x; $70-12x. Agency commissions will be given only when camera-ready art is provided by agency. For ads using blind box number, add $5 to total cost of ad. Send ad copy with payment to Dawn Nilsen, WEEDS TREES & TURF, 1 East First Street, Duluth, MN 55802 or call 218-723-9200.

BOX NUMBER REPLIES: Mail box number replies to: WEEDS TREES & TURF, Classified Ad Department, 1 East First St., Duluth, MN 55802. Please include box number in address.

BUSINESS OPPORTUNITIES

For sale: Established residential/commercial landscaping business. large inventory of equipment and present accounts included, Aurora, Illinois $57,000. Call Ana, Royana Realty 312/896-8800. 3/87

Excellent business opportunity in northwest Montana, near Glacier National Park. Owners desiring to retire from rapidly expanding bluegrass sod farm. High return on investment; high potential for future growth. Negotiable terms with owner financing. Send letter of interest to: Sod Farm, P.O. Box 2401, Kalispell, MT 59903, or call 406-755-6655. TF

WANT TO BUY OR SELL a golf course? Exclusively golf course transactions and appraisals. Ask for our catalog. McKay Golf and Country Club Properties, 15485 N. East Street, Lansing, Michigan 48906. Phone (517) 484-7726. TF

HELP WANTED

EXPERIENCED FOREMAN: Landscape Design & Construction Firm, seeking an **EXPERIENCED** Foreman, 3-5 yrs. Individual must be able to take total responsibility of projects, from start to finish. Plant knowledge, Construction Techniques, and Blue Print reading a must. **SALES:** Landscape Sales person, 1-2 yrs. experienced. Individual must be aggressive, and willing to learn. Design ability a must. Contact Jim at Vander Veen Landscape Co., 840 West Columbia St., P.O. Box 164, Mason, MI 48854, (517) 676-1093. 3/87

PARKS SUPERINTENDENT: Innovative and motivated individual to supervise and schedule all phases of parks, public grounds, and cemeteries maintenance. Degree in Parks administration, Turf Management, or Horticulture with three years experience. Salary $22,711 to $31,797 plus excellent fringe benefits. Contact City of Portage, Personnel Department, 7800 Shaver Road, Portage, MI 49081. 3/87

LANDSCAPE INSTRUCTOR: Dept. of Golf Course and Landscape Operations - Teach all plant materials courses, landscape installation and maintenance, landscape design, help supervise summer on-job-training. M.S. degree in horticulture, plant science, or similar plus practical industry experience. Familiarity with plants of S.E. U.S. desired. Salary based on qualifications and experience. Deadline: Open. Contact Lake City Community College, Rt. 3, Box 7, Lake City, FL 32055, (904) 752-1822 ext. 313. AA/EO EMPLOYER. 3/87

FIRST LINE SUPERVISOR cemetery maintenance crew of 10. Good working knowledge of lawns, shrubs, flowers, equipment maintenance required. Send detailed resume including job descriptions and salary history to: WTT Box 418. 3/87

LANDSCAPE CONSTRUCTION FOREMAN: Excellent opportunity for a hard working individual to work with an expanding commercial landscape contractor in the Boston, MA area. Must be experienced in all phases of landscape construction. Year round full time position. Good salary and full company benefits. Send Resume to G.S.G. Corp., P.O. Box 2071, Framingham, MA 01701. 3/87

LANDSCAPE CONSTRUCTION FOREMAN: Opportunity to supervise landscape construction crews for aggressive landscape design/build and maintenance company. Horticultural degree and experience preferred. Send resume and salary requirements to Scott Byron & Co., 191 E. Deerpath Rd., Ste. 103, Lake Forest, IL 60045, 312-234-3334. 3/87

LANDSCAPE MAINTENANCE - Progressive Washington D.C. area landscape firm is looking for responsible working foremen & trainees to join our Maintenance Department. Our Maintenance Program consists of 2-3-man crews doing residential tree, shrub & bed care with an emphasis on quality. We work a 4-5-day week and offer good pay with benefits. Willingness to work hard and produce is essential. Send resume and references to: **GARDEN GATE LANDSCAPING, INC.,** 821 Norwood Road, Silver Spring, MD 20904. 3/87

Fleet Superintendent/Equipment Coordinator to perform maintenance on diesel/gas equipment 80 h.p. to 1 h.p. and coordinate the use of equipment for a grounds maintenance service company throughout the state of Florida. Please send resume to Quandt-Ayer Enterprises, P.O. Box 271880, Tampa, FL 33688. 5/87

LANDSCAPE SUPERVISOR: Adult residential community of 8,000 has immediate opening for position of supervisor with working knowledge of landscape maintenance. Experience in all phases of landscape maintenance. Administrative experience in planning, budgeting, scheduling and control of labor/materials necessary. Must be able to resolve resident problems, perform under pressure, and meet deadlines, Education and experience equivalent to two years college and three years of responsible and varied horticultural experience including landscape design, construction and maintenance, or graduation from accredited college or university with a bachelor's degree in ornamental horticulture. Salary commensurate with experience; excellent benefit program. Qualified applicants may submit resume to Personnel Director, Golden Rain Foundation, P.O. Box 2070, Rossmoor, Walnut Creek, CA 94595. 3/87

Landscape Maintenance - Premier landscape management firm specializing in commercial maintenance located in growing southern metropolis seeking qualified superintendent Degree in horticulture or 5-years experience in supervisory position desired. This position requires a highly motivated individual with good communication skills along with strong personnel management skills. Must have knowledge of turf and plant materials indigenous to the south along with high standards in maintenance practices. Salary commensurate with experience and background. Excellent benefit package including retirement. Send resume along with photograph and three references to WTT Box 417. 3/87

SALES PERSON/MANAGER: Expanding irrigation/landscape contractor is seeking a qualified individual for a full time highly diversified sales management position. Experience should include design, sales, estimating, scheduling, and administration. Massachusetts and New Hampshire territory—very desirable area. Send resume to G.S.G. Corp., P.O. Box 2071, Framingham, MA 01701. 3/87

LANDSCAPE MANAGER: Adult residential community of 8,000 residents has immediate opening for position of Landscape Manager. This ADMINISTRATIVE position requires demonstrated supervisory and administrative abilities involving the administration of a $2 million budget with up to 55 employees. Familiarity with computerized work order and management data base systems is desirable. Degree in horticulture desirable. Additional experience will be considered in lieu of degree. Salary commensurate with experience. Excellent benefit program. Qualified applicants may submit resume to: Personnel Director, Golden Rain Foundation of Walnut Creek, P.O. Box 2070 Rossmoor, Walnut Creek, CA 94595. 3/87

GROUNDS MAINTENANCE SUPERVISOR- needed in New England Area for Design/Build/Maintenance firm with a strong commitment to professionalism. Must be strong in organization, communication, and personnel management skills. Will supervise approximately four crews maintaining commercial, industrial, and condominium property. Must have thorough knowledge in Landscaping industry and 5 years experience in Foreman/Supervisor position. Flexible with salary and benefits. Send resume and salary history to: WTT Box 419. 3/87

LANDSCAPE MAINTENANCE FOREMAN: Expanding landscape firm, in the Boston MA area is looking for responsible foreman to do quality commercial maintenance. Experience should include complete knowledge of turf, bed-care, and ornamentals. Year round full time position. Excellent salary and full company benefits. Send resume to G.S.G. Corp., P.O. Box 2071, Framingham, MA 01701. 3/87

LANDSCAPE MAINTENANCE AND CONSTRUCTION FOREMEN: Suburban Cleveland firm is seeking experienced individuals who can work together with other people. Must be hard working, organized and capable of directing a project from beginning to end. You will report directly to the President. Salary commensurate with experience. Send resume to: P.O. Box 391002, Solon, OH 44139. 3/87

LANDSCAPE MAINTENANCE SUPERVISOR: Major Landscape maintenance company located in southern Calif. is looking for self starting, experienced landscape manager to run their Maintenance Div. Must have min. 2 yr. degree in Horticulture with field experience. Pest control lic. a plus. Salary negotiable based on experience. Send resume with references to **HYDRO WEST, P.O. BOX 116, AGOURA HILLS, CA 91301.** 3/87

IRRIGATION FORMAN: Full-time position available at southern Connecticut's most exclusive Landscape Design/Build firm. Applicant must be knowledgeable and experienced with in-field design, installation and maintenance of underground irrigation systems. $20,000 plus per year with paid health insurance and paid vacation. Please reply by letter or resume to: Geiger's Site Planning and Development, 1135 Post Road East, Westport, CT 06880. TF

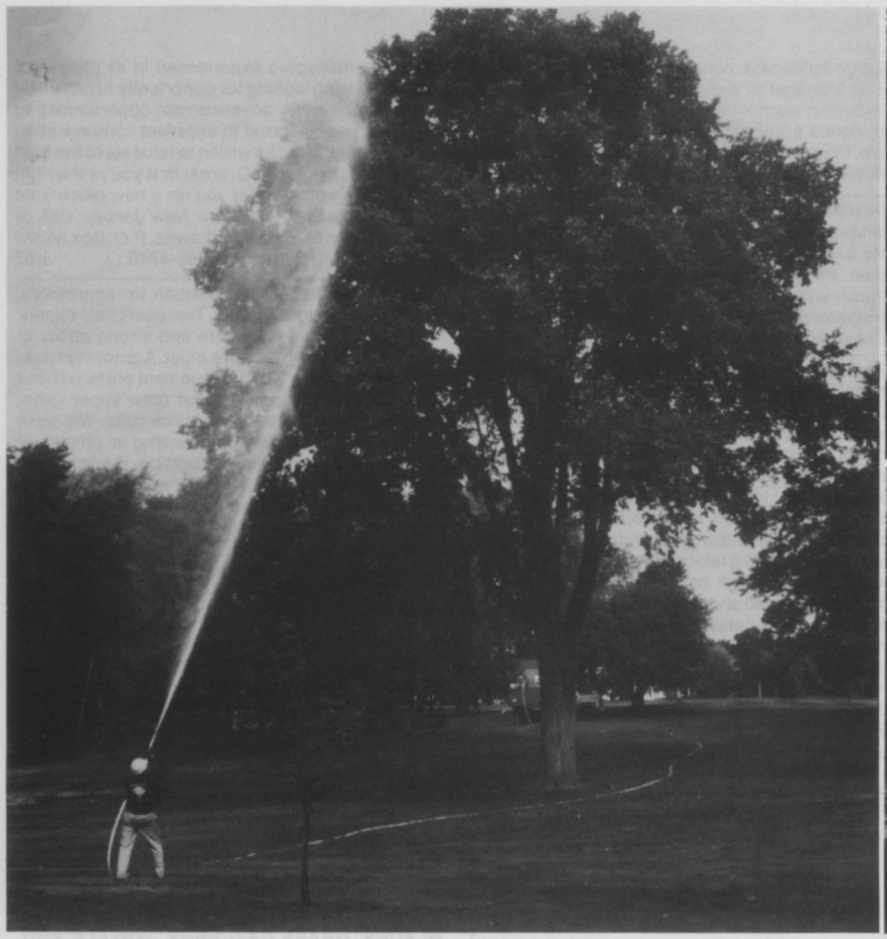
HELP WANTED

Assistant Managers & Foremen

Excellent growth opportunity with Connecticut's largest landscaping firm. Complete Interior and Exterior Construction and Maintenance Departments. Candidates should have an "A.S." or "B.S." in Horticulture or equivalent in experience also two years experience supervising and motivating people. Excellent company benefits. Salary commensurate with experience. Send resume with education, experience, and salary history in confidence to:

Milford

MILFORD LANDSCAPING & MAINTENANCE, INC.
P.O. BOX 2-186
MILFORD, CT 06460
203-878-8748



How do you train applicators to spray...on target?

Keeping sprays on target requires a lot of knowledge and skill. That's why applicator training is vital. An unskilled applicator who sprays off target wastes time and increases fuel and material costs. Weather conditions or a poorly calibrated sprayer could result in environmentally unsound pesticide use.

This year, improve accuracy of pesticide application by learning how to spray trees the right way.

The National Arborist Association (NAA) has available three educational videotape programs on pesticide application and sprayer calibration.

Each program is designed to increase applicator knowledge of spraying and spraying techniques. No other training program on tree spraying is currently available. Program videotapes cover **Sprayer Operation, Sprayer Calibration** and **Application Techniques.** A calibration manual is included with each order.

Videotape programs provide the beginning applicator with a basic understanding of spraying trees. They also help the more experienced operator solve mechanical and spray problems that regularly occur on the job.

The **On Target** series is available only as a set of three videotapes. It is made possible by voluntary contributions of NAA active and associate members. Cost for the set and calibration manual is $300.00. Because of their prior contributions, NAA members may purchase the set for $150.00.

Order your videotapes today. Start training applicators the right way. Let us spray...**on target.**

National Arborist Association
174 Route 101
Bedford, NH 03102
(603) 472-2255

SEND THIS ORDER FORM TODAY.
On Target... Videocassette Programs, $300.00 ($150.00 NAA Members)

Ship to:_____

Firm:_____

Street:_____

City:_____ State:_____ Zip:_____

Phone: ( )_____

Please ship:_____ sets of the **On Target** videocassette programs.

Check for $_____ U.S. Funds or Purchase Order Enclosed.

Signature:_____ Date:_____

HELP WANTED

LANDSCAPE MAINTENANCE FOREMAN: Opportunity to supervise landscape maintenance crews for aggressive landscape design/build and maintenance company. Horticultural degree and experience preferred. Send resume and salary requirements to Scott Byron & Co., 191 E. Deerpath Rd., Ste. 103, Lake Forest, IL 60045, 312-234-3334. 3/87

Maintenance foreman to do quality commercial maintenance. Knowledge of turf and ornamentals and at least 3 years experience. Good salary and benefits. Reply to Country Greenery, Box 638, Pittstown, NJ 08867. 3/87

MANAGEMENT: Ever-Green Lawns Corporation, a division of the multi-national Hawley Group, Ltd. is looking for experienced lawn and tree care professionals. Please respond in writing only to Richard D. Niemann, Corporate Recruiter, Ever-Green Lawns Corp., 1390 Charlestown Industrial Drive, St. Charles, MO 63303. TF

MANAGERS NEEDED FOR LAWN CARE BRANCHES. One of the Northwest leaders in lawn care and tree care is looking for experienced successful managers to run a lawn care branch with tree service in the West. Salaries range from $29,000 to $40,000 per year. Send resume to WTT Box 415. TF

GROUNDS MAINTENANCE AND PLANTING SUPERVISOR/FOREMAN: Well established landscape contractor in the Philadelphia area is seeking experienced quality supervisors and/or foremen to fill various positions. Salary and benefits commensurate with experience. Forward resume to: Personnel Office, Heyser Landscaping, Inc., 400 N. Park Ave., Norristown, PA 19403. 4/87

OUTSTANDING OPPORTUNITIES FOR ARBORISTS with sales experience to join rapidly growing, full-service tree care company. All benefits and incentives. Call or send resume to **SAV-A-TREE OF WESTCHESTER,** c/o Daniel Van Starrenburg, P.O. Box 527, Armonk, NY 10504, 914-666-8202. 3/87

Landscape Architects/Supervisors (project foremen) to join a nationally acclaimed firm looking to expand into its second generation Long Island area supports a high budget landscape industry. Year round employment, company benefits and continuing education available. Experienced and aggressive people send resume to: **GOLDBERG & RODLER, INC.,** 216 East Main Street, Huntington, New York 11743. 4/87

HELP WANTED: Foremen in these departments: -Landscape Construction, -Grounds Maintenance, -Lawn Care Applicator. Coronis Landscaping - a company dedicated to professionalism and ingenuity - has immediate openings in the above positions. Minimum 3 years "hands-on" experience required. Must be a motivator and able to communicate with crew and clients. Year round salary and benefits available. Send resume and salary requirements to: **CORONIS LANDSCAPING,** 7 Pike Street, Nashua, NH 03060-5031. 3/87

LANDSCAPE MAINTENANCE FOREMAN: Firm needs individual able to supervise and motivate own crew. Candidate must know plant materials and standard horticulture practices. Position offers excellent growth potential and salary commensurate with experience. For more information, call American Lawn Care Company, Niles, IL. 312-965-2427. 5/87

Landscape Maintenance Foreman to provide quality service on award winning landscape. Join a strong team of professionals in setting the pace for quality craftsmenship. Reply to Joan Hickman, P.O. Box 9454, Naples, FL 33941. (813) 597-8136. 3/87

Large landscape contracting firm seeking a Nursery Manager who is aggressive, responsible with excellent plant knowledge. Education and/or experience preferred. Salary and benefits negotiable. Please send resume to P.O. Box 725, Utica, MI 48087. 4/87

IRRIGATION FOREMAN: Leading central Ohio landscape contractor has an immediate opening for experienced Irrigation and Landscape Foreman. Permanent position with benefits. Send resume with experience and salary history. to: Riepenhoff Landscape, Inc., 3872 Scioto Darby Creek Rd., Hilliard, Ohio 43026. 3/87

Position open. Executive Director. The International Society of Arboriculture is seeking an Executive Director for its office in Urbana, Illinois. The individual will direct both day to day and long-range functions of a 4,500 member professional organization and serve as a spokesperson for the arboricultural industry. Candidates should have a strong management background and executive experience within the green industry. Experience in the field of public relations would be beneficial. A job description will be provided upon request. Those interested should submit a letter of application describing personal qualifications and salary requirements and include a resume. This information and three letters of reference should be mailed not later than April 10, 1987 to: Robert W. Skiers, 841 North Broadway - Room 705, Milwaukee, WI 53202. Salary shall be commensurate with experience. Equal opportunity employer. 3/87

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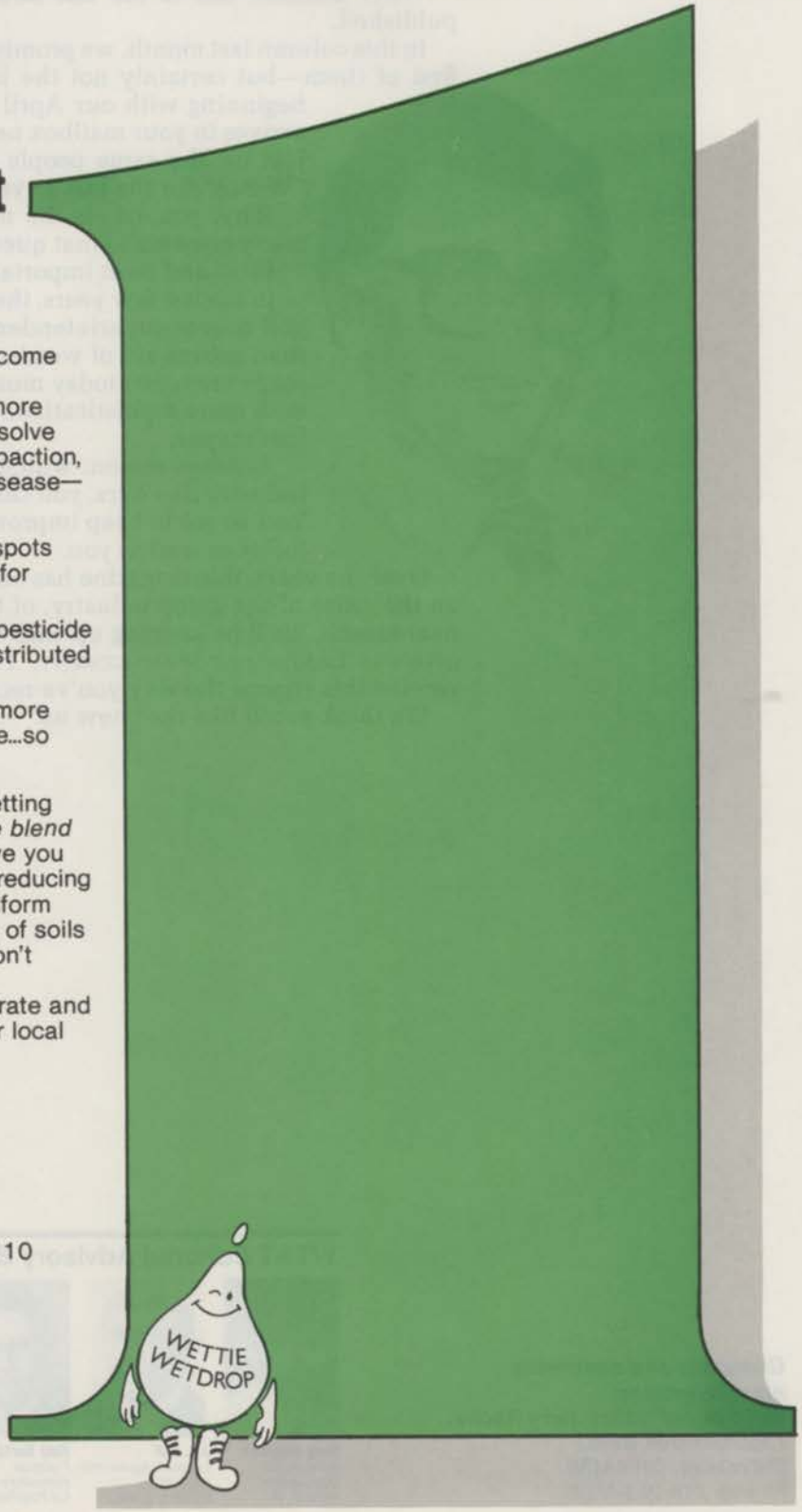

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A new beginning

Save this issue of WEEDS TREES & TURF. One day, it'll be a collector's item.

Why? Because this is the last issue of WEEDS TREES & TURF ever to be published.

In this column last month, we promised you some exciting new changes. The first of them—but certainly not the last—is that we're changing our name, beginning with our April issue. When LANDSCAPE MANAGEMENT arrives in your mailbox next month, please don't be surprised. It's just us: the same people that have been bringing you good old "WEEDS" for the last 25 years.

Why, you ask, is the magazine changing its name? There are many answers to that question.

First, and most important:

In the last few years, the job of being a landscape manager—or a golf course superintendent—has evolved into being much more than getting rid of weeds and caring for the trees and turf. Landscape managers today must manage more customers (or members) with more sophistication, more employees and more sophisticated landscapes.

Another reason, which I explained last month: in a dynamic industry like ours, you can't expect to stagnate and be successful. You've got to keep improving, keep looking ahead. And that goes for us as well as you.

Over the years, this magazine has enjoyed a reputation for keeping its finger on the pulse of the green industry, of tracking trends and changes. Beginning next month, we'll be keeping up with the industry by making a change of our own—to LANDSCAPE MANAGEMENT. The editorial and sales staffs hope you receive this change the way you've received us for 25 years—with open arms.

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Jerry Roche

Jerry Roche, editor

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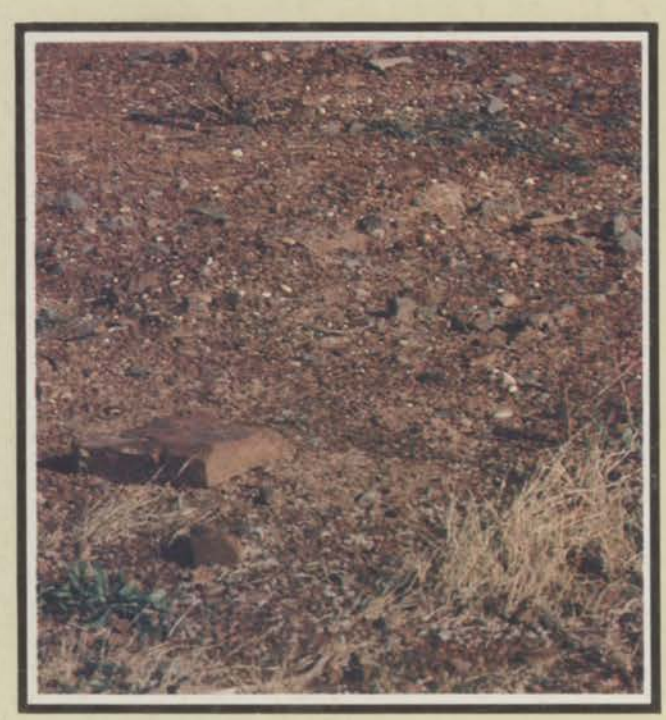

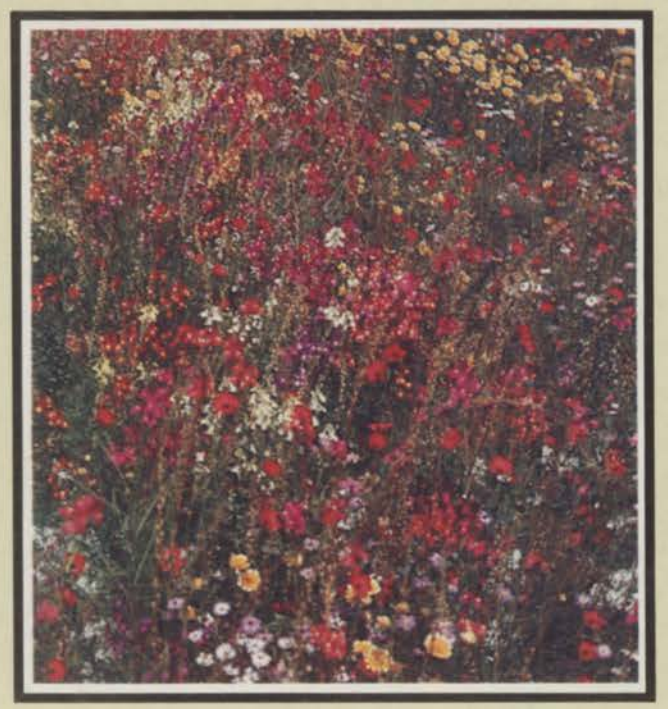

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